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This document reports on two institutes designed to communicate new concepts and procedures in vocational-technical education curriculum development to potential change agents in the various states. Formal presentations by 12 consultants and task force activities concerned innovation identification and prognoses for change, planning strategies for curriculum innovation, climates for innovation and change, implementing and expanding innovation, and cost-benefits and evaluation criteria. Institute evaluation is discussed in detail. Institute participants represented 33 states. Complete texts of formal presentations are appended. (CH)

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FINAL REPORT
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NATIONAL INSTITUTES ON INNOVATIVE CURRICULUMS IN VOCATIONAL–TECHNICAL EDUCATION

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VOCATIONAL – INDUSTRIAL EDUCATION **Research Report**

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OFFICE OF EDUCATION · · · BUREAU OF RESEARCH

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Hilding E. Nelson
THE PENNSYLVANIA STATE UNIVERSITY
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Research and Graduate Studies
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SUMMARY

The main purpose of these institutes was to communicate new concepts and procedures in vocational-technical education to potential change agents in the various states. To accomplish this purpose, four major objectives were established: 1. promoting an understanding of the implicit nature of curriculum, 2. promoting recognition of roles and models in evolving vocational-technical education, 3. identifying the nature, purposes and characteristics of innovative programs and 4. the development of guidelines and recommendations for innovation and innovators.

The general methodology of the institutes involved formal presentations by twelve consultants and task force activities aimed at innovation identification and prognoses for change. Initial presentations sought to provide a background of information related to curriculum and roles, or models, of curriculum from a broad perspective. Presentations of eight highly divergent curricular approaches provided the major focus for task force activities of the conferees.

Three evaluation devices were used in relation to this project. One device was a standard form developed by conference center personnel at The Pennsylvania State University to assess the general operational characteristics of conferences. The second form sought information about the nature and characteristics of programs under inquiry, and conferees projections as to their probable future involvements in innovative curriculum related activities following the institute. The third instrument was aimed at determining the extent to which conferees' projected post-institute involvement was fulfilled.

The conferees succeeded, in most cases, in fulfilling the expectations of the conference objectives. They identified innovations, helped to clarify their relationships to future vocational-technical innovation and projected these identities into recommendations for future innovation in the educational field. Beyond this, evidence was provided that the conferees exceeded their own expectations in actual post-institute involvements in innovative activities.

Conferees' innovation involvement sectors included: communication of institute information, personal involvements in projects, encouraged involvement of staff members or associates in innovative activity and specification of tangible commitments; specifically, in terms of finance, personnel, time and facilities. In all of these, positive commitment was evidenced, and future commitment was premised to a notable degree in the areas of finance and facilities.

Participants in the conference represented thirty-three states. They included supervisory or administrative personnel from state, district and local school levels; teacher educators; individuals involved in secondary, post-secondary and higher education; and a few individuals imminently expected to assume supervisory positions.

CHAPTER I

INTRODUCTION

The institutes described in this report were initiated in response to a U.S.O.E. memo, dated November 24, 1967: "Guidelines and 1968 Priorities for Vocational and Technical Education Summer Training Programs." The stated purpose of Institute Number 7 in this memo was: "To acquaint conferees with latest trends, projected changes and needs in curriculum development."

The Problem. The problem encouraging these institutes was, primarily, one of communicating to potential change agents of the various states the state of the art of new curriculum approaches.

The project director assumed that this communication would be facilitated by: 1. exposing the conferees to a broad range of programs and approaches paralleling the continuum of expectations for contemporary vocational technical education, and 2. asking the participants to use these programs as bases for preparing some guidelines, or suggestions, for future innovation or innovators.

Purposes. The four specific purposes for these institutes were defined, as follows:

1. To promote an understanding of the implicit nature of curriculum.
2. To promote recognition of the roles and models of an evolving vocational education.*
3. To identify the nature, purpose and characteristics of vocational curriculum innovation.
4. To develop recommendations and guidelines for the promotion of innovation.

(*Vocational education is used here to include any occupational, vocational or technical content.)

Institute Format. The plan and organization of both institutes was essentially identical. The general format involved three phases of activity: phase 1, an orientation to curriculum and the roles and models of vocational-technical education; phase 2, investigation of, and inquiry into, selected new vocational-technical programs; and phase 3, development of guidelines for future innovation based upon phases 1 and 2, and supplemented by the participants' own experiences.

Phase 1 involved four consultants and consumed the first day and evening of each institute. The first consultant was an expert on curriculum development and change. The second examined vocational-technical education role responsibilities at the high school, or lower, level. The third consultant examined the roles of vo-tech education at post-high school levels. The final orientation consultant provided information on models for carrying out change.

Two days and evenings were required for phase 2 and brought the conferees into contact with eight widely diverse types of occupationally oriented programs. These programs were selected on the basis that they either provided new curricular approaches, or they were attempting to fulfill unmet needs.

Opportunities were provided for the institute participants to querry each consultant following presentations, and during informal evening sessions.

Phase 3 started almost concurrently with the opening of each institute. Upon registration, conferees were given task force assignments and Task Force Charges (see Appendix D). During the presentations task force groups sat together; they used break periods and other free times for organizing their activities. Finally, they spent the morning of the fourth day preparing their report to the total group. Following group reports and discussion, the final task force reports were drawn up (Chapter III).

Evening meetings were scheduled during the first three institute days. The first part of each evening session was set aside for further interaction with consultants. This was followed by media presentations and by sharing of information among the conferees.

The final moments of the institutes were devoted to completing the conference operational and End-of-Institute evaluations. The complexity of the End-of-Institute Evaluation form (Appendix F) was such that participants were encouraged to complete Parts I and II during the regular institute sessions.

Sites and Participants. The first institute was held on the campus of The Pennsylvania State University, University Park, during the week of July 8-12, 1968. The second site was the University of California campus at Santa Cruz, July 22-26.

The maximum number of conferees at each institute was limited to 50; however, 33 approved participants attended the first institute, and 30 attended the second. Forty had been accepted for the first and 43 for the second--there were 20 accepted people who did not show up, or indicate they would not be there.

There were approximately twelve persons who sought acceptance, but could not meet the criteria for admission.

In addition to the formally accepted participants, one representative of the U.S. Office of Education attended most institute sessions.

A number of graduate students and faculty members from Penn State sat in on various sessions. One graduate student from Utah participated, as a guest, at Santa Cruz.

The conferees in the institutes represented 33 states and the District of Columbia. They were largely from the ranks of state and local vocational school administration-supervisory positions. Most of the remainder were teacher educators. There were no participants who could be classified under the fourth eligibility criterion: secondary school principals planning to inaugurate vocational courses. One teacher was accepted for institute at the recommendation of a supervisor who planned to hire him in a vocational supervisory position; and a guidance leader was accepted at the recommendation of her supervisor since she was also involved in program planning and implementation.

Accomplishments. The stated purposes for the institutes seem to have been quite well fulfilled. While the evaluation devices were not designed to effect quantitative growth measurements, referral to Chapter IV on evaluation shows substantial understanding of Purposes 1-3: nature of curriculum, roles, and the nature of innovations. In Chapter III, we have evidence of excellent fulfillment of Purpose 4: suggestions and guidelines for innovation and innovators.

Beyond the stated purposes, the project director was also concerned with encouraging conferees to participate in, or stimulate, innovation after leaving the institute. This concern was the central focus for the 6th Month, Post-Institute Evaluation. While it is obvious that six months is too short a span for positive definition of change in curriculums, the post-institute activities of the conferees were highly satisfying (see Chapter IV).

The enthusiasm and interest expressed during, and since, the institute by participants has been very gratifying to the director. In spite of the long hours and pressures of the institute, a great number have expressed the desire that this sort of project become a regular activity during the future.

CHAPTER II

METHODS AND PROCEDURES

The function of this section is to expand upon the general information provided in the previous chapter.

Participant Recruitment. Criteria for participant selection were spelled out in the U.S.O.E. institute proposal of November 24, 1967. The specific categories used for conferee acceptance were as follows:

> Participants must currently be employed in one of the following positions and have some measure of responsibility for vocational curriculum actions and/or decision making:
>
> --State vocational administration or supervision.
> --Local vocational school director or principal.
> --Teacher educator teaching vocational curriculum courses.
> --Secondary school principal considering addition of vocational courses.

Final selection of the participants was made by the project director. As indicated in the previous section, in two cases, exceptions to the criteria were deemed advisable in response to the direct requests by school administrators that these individuals be included. A few exceptions to regional attendance sites were also made; in these cases differentials in travel expenses were provided by the sending states.

Initial recruitment of participants was made by sending institute information to all state directors of vocational education and vocational teacher education institutions. A number of recommendation forms were included with the informational brochures, and the leaders were asked to circulate the informational materials to anyone in the state who could fit the eligibility requirements.

A great share of the state leaders returned the recommendation forms. Other individuals contacted us directly upon hearing about the institute from the state leaders, the Office of Education or other sources (see Chapter IV, Conference Evaluation).

Upon receipt of a candidate's name, conference coordinators forwarded formal application forms and general information about the institute to the requestor. Formal applications were then processed by the project director. Conferees accepted were notified of their acceptance by the conference coordinator, and were provided with pertinent information about travel, housing and the conference locale.

Nature of the Institutes. No one methodological name could be applied to these institutes. The primary approach was that of an investigative workshop--or Project Inquiry.

Twelve formal presentations were made and followed immediately, and again in the evening, with interregation-clarification sessions which sought answers in terms of the task force charges. Three-fifths of the days included formal presentations, but time-wise, actually about one-half of the institute time was thus consumed.

Each consultant was encouraged to, and did, supplement his presentation with media materials. These included films, slides, slide-sound units, sound tapes and transparencies. Sometimes, these were used during the presentation, other times they followed presentations. In one case, extra material was presented during the evening session.

As indicated in Chapter I, the task forces, in reality, made the participants the key focal unit of the institutes. Commencing the second day, a task force leader assumed the responsibility for meeting with program consultants, introduced them to the group and acted as question-leader. An attempt was made to involve as many people as possible to functional task force activities--each task force had a leader, recorder and reporter. Task force assignments were largely established on the basis of preferences expressed by conferees on their application forms. Specific assignments into the responsibility areas were made by the project director prior to each institute. Assignment changes were permitted, but an attempt was made to maintain relative balance in numbers per task force; also, to mix up task force state representation.

The final two institute days were almost entirely handled by the participants within the guidelines established by the director. They handled the work sessions and group presentation-discussions.

Formal Presentation Emphases. The complete texts of formal presentations have been provided in Appendix E. The major emphasis of each is indicated below:

1. (Keynote) Dimensions of Curriculum Actions described the nature of curriculum, changing dimensions of curriculum emphasis and actions for revising or developing curriculum.

2. Roles of Occupational Education in Junior and Senior High Schools provided insights into vocational education responsibilities at these levels, and explained developments in "Introduction to Occupations" courses, nationally.

3. Roles of Occupational Education at the Post-High School Level clarified the concept of occupational education and provided examples of changes, and problems of change, at the post-secondary level.

4. *Vocational Education Models* was concerned with processes and problems related to bringing about change in public education. The *zero-reject* approach was emphasised. The PERT model was demonstrated in a real setting--at the San Mateo, Know and Care Center.

5. *Recapturing Dropouts by Restructuring Learning Situations* demonstrated one of the few real operational attempts to return educationally-rejected youth to the mainstream of education and society. The concept of teacher "security" training provided a new dimension for consideration by administrators.

6. *Training the Unemployed for Drafting-Design Occupations* presented information and research data on a MDTA project. The project provided trainees with a comprehensive education for a technician occupation within, approximately, one-half the normally expected training time. Follow-up of graduates was utilized to validate curriculum content, as well as, to compare training approaches.

7. *Making Useful, Productive Citizens of Slow Learners* demonstrated that segregation of these students from regular high schools has values for social and attitudinal development which outweigh traditional non-segregation viewpoints. The systems utilized also provided new viewpoints and practices for occupational preparation and general education in a highly student-centered school.

8. *The Richmond Plan and Dropouts* was a report on a Stanford Research Institute project to evaluate the Richmond plan as it has developed in 9 California schools. While indicating that the plan was not "designed to prevent dropouts", the presenter's emphasis on the effects of the plan on under-achievers would suggest that it may well be a retardant to student's dropping out. Effects of the system on teachers was an important factor of concern for administrators.

9. *A Training Program for a New Technology* not only provided an overview of the Bio-Medical Equipment Technology program, but also brought into focus procedures needed for high-level technology curriculum development, and problems unique to occupational training programs for the para-medical field.

10. *People-Centered Comprehensive Vocational-Technical Education* emphasised behavioral analysis as the primary basis for the development of curriculums which are relevant to student needs fulfillment and career development. Added to the base, inter-disciplinary planning and teaching, and individualized instruction provide comprehensive programs for all potential students. The school's relationships with the E.S.'70 consortium were also explained.

11. *Curriculum Innovation for Change Within the School Setting* was, primarily, concerned with effective methodology for producing change in curriculum and teachers within existing school structures. Project FEAST provided the background for this exploration. It emphasised team planning, team preparation, and the maximal utilization of inside and outside resources.

12. On-Campus Work Experiences for the Mentally Retarded demonstrated the use of school resources for preparing EMR students for entry into the occupational arena, and cooperative inter-relationships between the schools and the Department of Vocational Rehabilitation. Also discussed were three alternative ways to provide placement and training for these students.

Committee Work Emphases. The committees of these institutes were actually five task forces at each institute whose tasks were defined by the project director prior to the commencement of the first institute. While strict adherence to the Task Force Charges (Appendix D) was not mandated, reports generated by the task forces tended to follow the suggested format.

In Chapter III, the task forces' suggestions and recommendations for innovation and innovators have been integrated from the Eastern and Western Region reports. The specific areas of focus for each task force were, as follows:

Task Force 1--Innovation identification and prognoses.
Task Force 2--Planning strategies for curriculum innovation.
Task Force 3--Climates for innovation and change.
Task Force 4--Implementing and expanding innovation.
Task Force 5--Cost-Benefits evaluation criteria.

Institute Evaluation. Three evaluation instruments were used in assessing the institutes: 1. a general operational instrument, 2. the End-of-Institute Evaluation form and 3. the 6th-Month, Post-Institute Evaluation Form (Appendix F).

The institute operation assessment form, Conference Evaluation, was developed by the Continuing Education Center at Penn State, and has been used for some time to provide feedback on characteristics which will improve the mechanics of institute operations and personnel utilization.

The End-of-Institute Evaluation form was developed by the project director with the advice of the assistant director for evaluation. It was composed of three major sections: Part I, Inquiry, was concerned with analysis of the characteristics exhibited by the eight programs presented during the institute; Part II, Program Clarification was concerned with possible relationships between the programs presented and vocational-technical education, as a whole; and Part III, Projections, was concerned with the relative merits of innovations noted in the programs for continuance, and personal projections for individuals future relationships to innovation were assessed as a basis for post-institute evaluation.

The 6th-Month, Post-Institute Evaluation was developed by the project director and was primarily concerned with what participants were doing, in terms of innovation activities, since the close of the institute. Since the six month period is, essentially, too short a time for adequate follow up, conferees were asked to provide answers in terms of what they were doing at the time the questionnaire was received, and also, what they planned to do within the subsequent twelve months.

Detailed analyses of the evaluation forms, and derived conclusions, have been provided in Chapter IV.

CHAPTER III

TASK FORCE RECOMMENDATIONS AND GUIDELINES

During each institute, five task forces focused upon innovation in curricular activity and characteristics affecting innovation. In some cases task force inquiry was concerned primarily, with information provided during the institutes; in other instances, the groups used institute information as bases for projection--incorporating their own special knowledges and expertise. General guidelines for the task forces are shown in Appendix D.

The subsequent material summarizes the results of task force inquiries for both institutes. The specific recommendations and guidelines for innovation and innovators of the two institutes have been integrated into a composite report for each task area.

T.F. #1: Innovation Identification and Prognoses

In both institutes, Task Force #1 addressed itself first to the question: "What is innovation in curriculum?" Essentially, both groups viewed innovation as a systematic attempt to redesign educational approaches or practice to promote positive curriculum change--changes which better fulfill existing and evolving objectives.

As they examined the eight programs under inquiry, the groups questioned the totality of uniqueness evidenced in any one program. This moment of doubt encouraged them to seek, to identify as innovative, those particular aspects which are not found in common practice, or which seem to offer particular promise for educational improvement.

Innovations Identified.

The program characteristics, identified as innovative by this task force, included the following:

A. THE WORK OPPORTUNITY CENTER--

1. Breaks the cycle of problems experienced by dropouts by providing a sympathetic environment.
2. Fulfills the special needs of these students by designing total curricular experiences to meet those needs.
3. Provides a more acceptable physical learning environment by establishing a separate, atypical facility.
4. Provides continuous student status recognition through the utilization of development-recognition certificates and high school diplomas.
5. Follows up on graduates socio-economic problems, as well as on-the-job success.

6. Provides evidence of a school system which has accepted responsibility for dropouts and is seeking to rectify the system which has encouraged students to drop out.

7. Operates unique, positive and continuous recruitment and retention systems involving students and teachers of the school.

B. THE DRAFTING-DESIGN RETRAINING PROGRAM--

1. Exhibits the feasibility of technician training programs having a shorter duration than normally expected.
2. Shows the application of research to validate training program content, organization and practices.
3. Provides evidence that a job-centered approach to technician training is, at least as, realistic as an academic-centered approach for meeting human and industrial needs.
4. Raises questions as to the validity of existing standards in math and science as prerequisites for technician training and job success.

C. THE MARKET HIGH SCHOOL--

1. Shows that separate school facilities for slow-learning students can provide them with social-development experiences (extra-curricular and inter-personal) which would not have been possible in a comprehensive junior or senior high school.
2. Provides work experiences in competitive occupational situations, rather than in sheltered workshop situations.
3. Continually adapts curriculum content to the immediate needs of students in both academic and occupational fields.
4. Allows students to assist in directing other students in summer agricultural activities, and take part in school planning, shop-development activities.
5. Provides high school diplomas for graduates, and meaningful participation in graduation activities.
6. Involves students in community activities and projects.

D. THE RICHMOND PLAN--

1. Actively seeks to motivate under-achieving students toward high achievement levels through meaningful, inter-related educational experiences.
2. Provides pre-technical preparation for potentially capable students.
3. Utilizes an occupationally-centered core approach which integrates English, math and pre-technical shop experiences and content.
4. Involves extensive inter-disciplinary planning and cooperation of teachers in instruction, but is not typically team-taught.

E. THE BIO-MEDICAL EQUIPMENT TECHNOLOGY PROGRAM--

1. Provides a marriage ofdisciplines or dissimilar technologies.

2. Uses an outside agency to develop a data bank of information for curriculum development and implementation through the country.

3. Utilizes advisory personnel from equipment manufacturing, as well as, professionals related to the employment field and potential employers for program planning and technician training.

F. THE QUINCY VO-TECH PLAN--

1. Bases curriculum development upon criteria of occupational relatedness: families of occupations.

2. Develops content based upon behavioral analyses through cooperative efforts of teachers and non-profit educational research organizations.

3. Designates teachers as directors of learning.

4. Provides for an educational facility with the flexibility which will make possible fulfillment of newly developed, and evolving, comprehensive public education philosophies and objectives.

5. Provides at one site a capability for meeting local educational needs at secondary, post-secondary and adult education levels.

G. THE FEAST PROGRAM--

1. Provides an occupationally-centered core program cooperatively planned by the home economics, business-math and English teachers; the school cafeteria manager; and counselor of the school.

2. Solves a problem of quantity foods teacher recruitment by supplementing the education of home economics teachers.

3. Provides program implementation impetus through workshop experiences involving all the educative personnel who will relate to the program in a school.

4. Utilizes the school cafeteria as the activity center for quantity foods and service lab work with the cafeteria manager serving as a learning leader.

5. Provides channels for open-ended education and placement through cooperative agreement and active interaction with community colleges, colleges, business and industry.

6. Recruits students from a multiplicity of ability levels rather than one general category of student.

H. THE OAKLAND EMR ON-CAMPUS WORK-STUDY PROGRAM--

1. Utilizes DVR funds to provide paid work experiences for EMR's on the various campuses in the district.

2. Provides related "occupations" coursework to prepare students for job interview and application involvements.

3. Provides placement; coordinates placement and/or further training of graduates with DVR and private organizations.

4. Promotes community relations programs to encourage their involvement in training programs and employment of EMR's.

Valuation Recommendations.

The second concern of this task force was to make valuations, or recommendations, in terms of the innovation aspects identified for general application to vocational-technical education, or for continuance of the innovation.

RECOMMENDATIONS: INDIVIDUAL PROGRAMS

A. The Work Opportunity Center program for dropouts:

1. Lends itself to large school populations, but may be adaptable to smaller communities.
2. Will depend for success, largely, upon the motivation and inspiration of the staff and, in particular, the leader.
3. Provides a model of the emphathetic atmosphere which should be a model for all schools.
4. Provides a positive model for meeting individual needs as a part of a regular school system, and may suggest a model approach for resident instruction.

B. The drafting-design retraining program:

1. Provides a comparative research design base for long-term follow-up studies.
2. Suggests approaches to technical education training which may be operational at the twelfth grade level in large vocational-technical schools.

C. The Market High School approach to the education of slow learners:

1. Provides a positive model for the preparation of students, usually considered as marginally employable, for competative work situations.
2. Provides an excellent example of community involvement and support in the job preparation of the less capable student.
3. Suggests that separate facilities may provide better all-around educational situations for students with special needs than do comprehensive high schools.

D. The Richmond Plan pre-technical program:

1. Should be continued and expanded to include other trade or occupational areas.
2. Inter-disciplinary planning approach should be a desirable technique for most occupationally oriented programs.

E. The bio-medical equipment technician program:

1. Provides a model for planning and teaching of other combined technology programs.
2. Illustrates the need for combined involvement of persons concerned with licensure, or recognition, of program graduates in program planning and execution for the para-medical occupations.

F. The Quincy approach to comprehensive vocational-technical education:

1. Permits optimum utilization of a facility for occupational training at all educational levels.
2. Suggests a need for research to explore the merits of the regional area school concept, as contrasted with a comprehensive school.
3. Gears the instructional organization to maximize saleable skill development of all the students.

G. The FEAST program approach to bringing about change in the regular school setting:

1. Is adaptable to all grade levels above the ninth grade, to all types of students, and probably, to most occupational fields.
2. Promotes maximum use of existing school facilities in using the school cafeteria as an educational laboratory.
3. Provides for optimum involvement of all types of personnel resources in program planning and carring out instruction.

H. The Oakland on-campus work experience program for educable mentally retarded students exhibits effective involvement of their agencies and organizations to support occupational training.

PROJECTIONS INTO THE FUTURE

The program presentations and discussions have stimulated out (task force) thoughts toward looking toward tomorrow. As far as the future of vocational-technical education is concerned, the following general directions would seem to merit considerations:

1. Instruction will take place in the best possible location, disregarding the limitations of the school boundaries, tax areas, attendance areas, or classroom facilities; such places as industrial sites, offices, museums, etcetera may well be unexplored educational sites.
2. Curriculum will be specified in terms of performance instead of time.
3. School districts will become "school systems" encompassing all grades and providing guaranteed-level instruction

for every student in both academic and vocational disciplines.

4. The subject matter in secondary education will be integrated, bringing together teachers of many disciplines.
5. All students will be guaranteed free public education to the level of his maximum development--K through Ph.D.
6. Schools will accept the "zero-reject" concept, and believe in it.
7. Vocational educators will accept the humanities as a legitimate function of vocational education and in turn, the academic teacher will accept a role in vocational education.
8. All programs will be developed in such a way as to make transfer to more advanced work possible for all students.
9. All educational programs will survive, or be discontinued, on the basis of cost-effectiveness.
10. A vocational curriculum should be based on the common elements of as many occupations as possible.
11. Each student will have a program individually designed to lead him from where he is to his stated occupational goal.

T.F. #2: Planning Strategies for Curriculum Innovation

Information from the institute consultants provided the basis for the work of the second task force. This basis was supplemented by personal experiences from the backgrounds of the task force members. The product of this interaction resulted in the following report which deals with five aspects of planning strategies for curriculum innovation.

Bases for Identifying Needed Innovation.

To determine the need for anything, there must be an understanding of, or mutual agreement on, the aims and objectives of the project or activity by those concerned or involved. Before we can reach agreement, we will need a common understanding of the philosophy, and common definition of terms, used in reporting results. In this paper, innovation is the keyword.

George Elison stated earlier that innovation is changing something which is established. Accepting this statement as a premise, we are led next to answer the question: what are some bases used for identifying a need for innovation in vocational education?

Through careful examination of consultant reports at the National Institutes on Innovative Curriculum in Vocational-Technical Education, several bases for identifying need were determined. It must be understood that needs will vary from region to region. The following bases were identified as symptoms, or validations, of needs for innovation by the consultants and participants in the institutes:

1. Lack of orientation on the junior high school level to occupational clusters.
2. Decisions premised upon relevant needs identified through surveys and research.
3. Funds given to stimulate innovation in curriculum by foundations.
4. Personal assessment interviews with school graduates and parents.
5. Studies of statistics on dropouts from conventional programs.
6. Comparison of juvenile crime rates from conventional programs versus programs centered around student needs.
7. High unemployment rates for people in the 18 to 21 year old age group.
8. Population explosion and population unrest.
9. Industry demand for high school diploma and/or vocational certificate as evidence of minimum educational achievement.
10. Interviews of supervisory level industry personnel to determine, typically, how well youth meet industry's needs.
11. Study of employment want-ads.
12. Field study by guidance and curriculum personnel.
13. Bulletins and reports from government agencies.
14. Person-to-person conversation with labor and community about school needs.
15. One school system's observation of the success of another's innovative program and its adoption as an answer to a problem.
16. Shorter work week and more time for vocational or recreational activities.
17. Community census.
18. Behavior analysis of what makes people employable.
19. Student expressions of interest and needs.
20. Teacher suggestions for change and questions about the system.

The Effective Innovation Leaders.

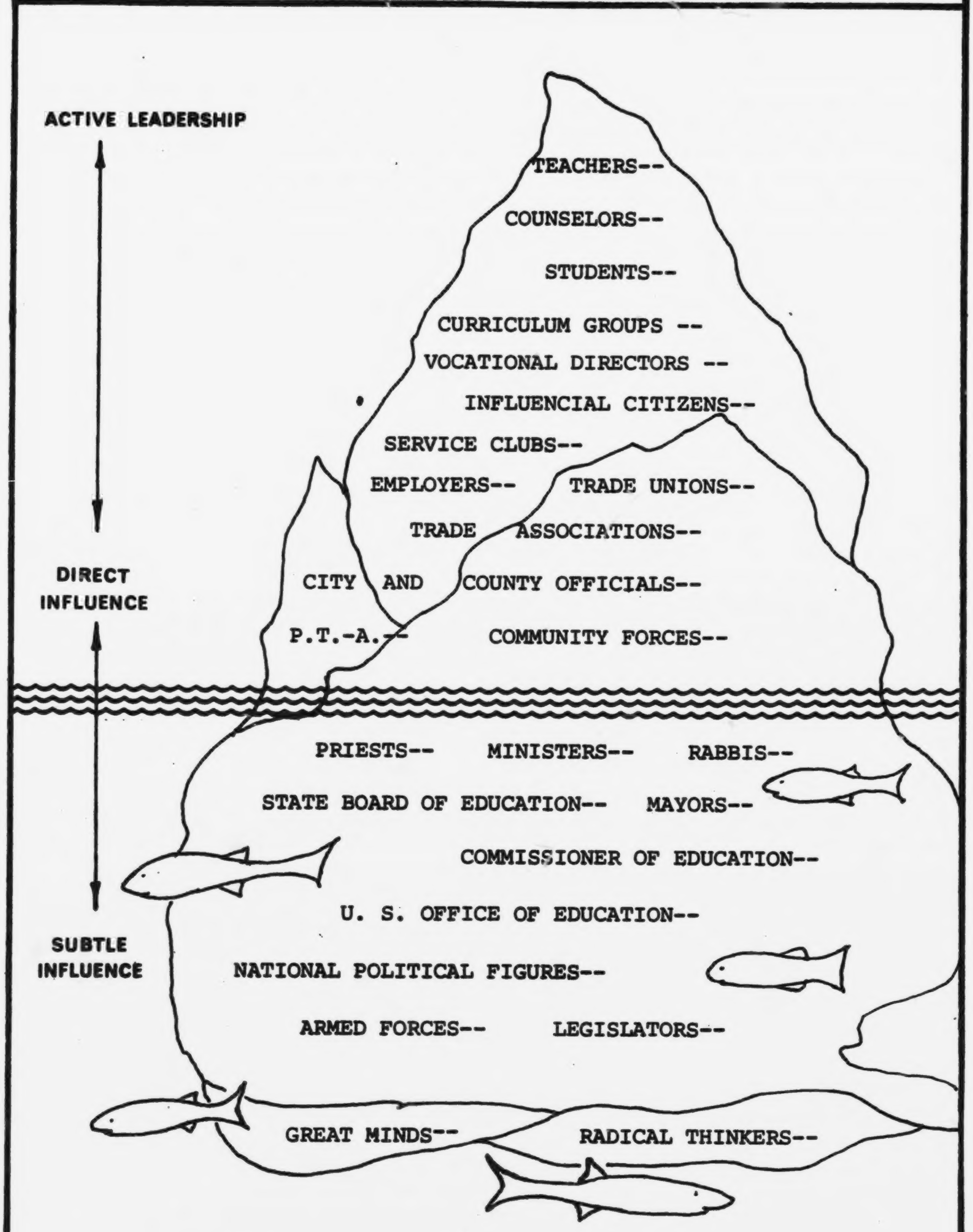
These are concerned people who understand what is happening, and who have action ideas. They may be people close to the field--vocational directors, school principals, industrialists, teachers--who see the need for change. They may be considered as the tip of the iceberg (Chart 1). Below the surface others, who may go unnoticed, will also influence the total structure.

The first, and most obvious, group will be the activists--those who proselyte, steal ideas, argue, design and try ideas.

The second level includes the more subtle leaders--the great minds, influential political figures, religious leaders, and even, the radical thinkers of the time.

CHART 1

THE LEADERSHIP ICEBERG


ACTIVE LEADERSHIP
DIRECT INFLUENCE
SUBTLE INFLUENCE
TEACHERS--
COUNSELORS--
STUDENTS--
CURRICULUM GROUPS --
VOCATIONAL DIRECTORS --
INFLUENCIAL CITIZENS--
SERVICE CLUBS--
EMPLOYERS--
TRADE UNIONS--
TRADE ASSOCIATIONS--
CITY AND COUNTY OFFICIALS--
P.T.-A.--
COMMUNITY FORCES--
PRIESTS--
MINISTERS--
RABBIS--
STATE BOARD OF EDUCATION--
MAYORS--
COMMISSIONER OF EDUCATION--
U. S. OFFICE OF EDUCATION--
NATIONAL POLITICAL FIGURES--
ARMED FORCES--
LEGISLATORS--
GREAT MINDS--
RADICAL THINKERS--

Personal Involvements in Planning Innovations.

Curriculum innovation is concerned with two areas: 1. Creating new programs (innovation) and 2. revising, supplementing or replacing existing programs with something better, and more effective (renovation). The purpose of each is to provide better education and training.

The personnel involved will be affected by the fact that they are dealing mainly with occupational education rather than college preparatory curriculums.

It is also important in planning innovative curriculums to know the levels or abilities of the students for whom the curriculums are planned, because ability level relates to employability potential, as well as, the type of employer.

With the above considerations in mind, this task force agreed that the following persons should be involved in curriculum planning:

1. Local school personnel: director of vocational education, coordinators and supervisors, principals, teachers, students and counselors.
2. Business, labor and industry representatives.
3. Publics: representatives of parents, service groups, clergy and news media.
4. Governmental: personnel from the state department, the U.S. Office of Education, employment services and other appropriate agencies.
5. Experts: curriculum specialists, social and psychological specialists and appropriate college personnel.

Establishing an Innovation Organization.

We would propose the establishment of a state-wide task force devoted specifically to evaluating needs for new programs, or changes in existing programs, to provide qualified personnel for business and industry. This group would be charged with the responsibility for planning, and promoting implementation of, programs or practices to meet expressed needs.

The membership of this state-wide task force would include representatives of: 1. school systems, 2. area vocational-technical schools, 3. community colleges, 4. technical institutes, 5. teacher training institutions, 6. state department of vocational-technical education, 7. state departments of resources and development, 8. State Chamber of Commerce, 9. organized labor, 10. CAMPS committee, and 11. State Employment Services.

This task force would meet regularly to consider and evaluate requests for assistance from institutions, business or industry which relate to the development of occupational competencies, or fulfillment of occupational needs. It would review and act on all plans or requests. It would table, reject or establish a priority for all items considered.

For any item considered worthy of implementation, the necessary liaison would be established with the State Research Coordinating Unit to determine whether similar needs had been expressed previously, or if implementation of the item was in process elsewhere. If not, appropriate action would be undertaken to involve a research unit in outlining the problem, and in the development of appropriate evaluative criteria.

The item would then be placed in the format required for review, and funding would be sought from a governmental agency, private foundation or elsewhere. Following funding, the innovation would be implemented.

During the experimental stages, the task force would receive reports and review progress, and would provide guidance or other assistance, as needed. After the experimental phase was completed, the task force would continue to promote utilization of the innovation as long as it continues to meet the needs for which it was developed--and as long as the needs were valid.

This organizational system might be copied, or adapted, to local school systems. With appropriate communications, the state unit can receive and act upon local needs, or maintain implementation channels at local levels.

Principles for Organizing On-Going Innovation

A. The organization for innovation should insure the existence of the following conditions:

1. A climate for change has been established.
2. A strategy for introducing the ideas to the implementers, or to key persons or groups, has been developed.
3. Participants are volunteers.
4. Teachers and counselors have been involved, early, in decision-making processes and in program planning.
5. Funds have been allocated for teacher training and planning time.

B. The organization should enlist the help of other personnel in the field, such as, curriculum experts.

C. It should provide adequate time and scheduling for on-going curriculum innovations.

D. It should provide continuous evaluations of the innovation.

E. Provisions should be made for individual differences within any new curriculum.

F. Curriculums must develop specific behavioral objectives based upon a sound philosophy of education.

G. Provision should be made for horizontal and vertical articulation.

H. Active advisory committee should be maintained to keep curriculums geared to manpower needs.

I. Close relationships between guidance and occupational education should be maintained at all times.

J. The organization personnel must be alert to trends and their implications for occupational education.

K. All elements required for innovation should be constantly recognized: students, teachers, facilities and supportive elements.

L. The structure should provide channels for the dissemination of innovation results, both for successful and unsuccessful attempts.

M. All innovation should work toward removal of barriers, such as cost, status, and pressures; breaking with traditions which prevent successful implementation of innovation.

T.F. #3: Climates for Innovation and Change

Agents for Change.

Agents for change are those people in positions to identify needs and/or apply pressures for bringing about change. These change agents include:

A. Students.

B. Educators--teachers, administrators, supervisors, counselors and teacher educators.

C. Others--civic, community and business leaders; legislators; governmental agencies; union and professional organizations; private foundations; research and informational organizations (e.g., ERIC, RCU); national seminars and institutes; and news media.

Agents' Involvements in Change.

The agents' roles in positive change promotion take place in four major contexts: support and supportive, services, leadership, research and evaluation. The typical types of activities may include such things as:

1. Student interest and manpower needs surveys.
2. Advisory committee interactions.
3. Program analysis.
4. Financial assistance
5. Program experimentation.

6. Research.
7. Publicity and communications.
8. Curriculum planning and development.
9. Student and program evaluation.

Units of Resistance to Change.

The things, or persons, which act as major resistance factors to change may be generalized to include: the establishment, power structures and inertia or apathy.

All of the agents of change may, also, be resisters to change. In addition, the following factors tend to inhibit the implementation of innovation: general procedural rules and regulations, regulatory agency restrictions, legislation, financing and financial conditions, and traditional educational philosophies.

Procedures to Neutralize Resistance.

The problem of overcoming, or neutralizing, resistance to change forces requires the development of a plan of attack which provides the resisters with: 1. understandings of needs for change, and 2. understandings of the benefits derived through new practices or procedures. Some actual strategies include:

1. Early, significant and continued involvement of all concerned with the change.
2. Development of communications and public relations procedures to sell programs, justify needs and emphasize positive educational outcomes.
3. Positive and continuing pre-service and in-service programs for educational staffs.
4. Positive programs to acquaint educators with new educational developments by providing opportunities for them to attend seminars, workshops and institutes.

Climates Conducive to Innovation and Change.

There are at least three climates conducive to innovation and change. These may be personalized into the categories: feelings of urgency, competition or humanitarianism.

Urgency may result from concerns for such things as: unemployment and underemployment, juvenile deliquency and high crime rates.

Competition may produce new patterns in programs and procedures as individuals, schools, districts or states seek identity through well-publicized innovation.

Humanitarianism is a response to recognition of the unfulfilled (Democratic) obligations of society to the socio-economically disadvantaged, the physically or mentally handicapped, the culturally and educationally deprived, and the confused or dissatisfied.

T.F. #4: Implementing and Expanding Innovation

Based on the innovative programs that have been presented, and without time for further investigation, we would recommend that certain strengths of these programs be considered for use in vocational-technical education. Our task force group has some reservations concerning making a blanket recommendation to include any of the programs as presented to become a part of state plans for vocational-technical education.

The members of Task Force #4 feel that those of us in vocational-technical education at this conference should assume leadership roles in bringing about innovations in the traditional programs if we are going to move vocational-technical education into the mainstream of education for the masses of people in all communities of the nation. We, like others in the conference, feel that one of the greatest benefits of this conference is the fact that vocational-technical people are beginning to think and talk about operating programs other than the traditional ones.

I. Features of programs, which should be considered as a regular part of vocational-technical education, included:

A. Work Opportunity Center

1. Non-school setting.
2. Short-term skill training.
3. Individualized instruction.
4. Social development experience.
5. Immediate rewards.
6. Extended school year.
7. Student-centered approach.

B. Market Street High School

1. Separation of students to provide for special needs.
2. Flexibility of classes.
3. Preparation of individualized instructional materials by teachers.
4. Exploratory occupational study opportunities.

C. A New Technology

1. Basic need for para-medical occupational training programs.
2. Summer intern program for students.
3. Interdisciplinary teaching approach.
4. Posting of lesson plans for inter-relating teaching.

D. Comprehensive Vo-Tech Education

1. Families of occupations approach
2. Behavorial analysis approach to curriculum development.
3. Training and retraining of teachers
4. Student-centered approach.
5. Interdisciplinary teaching approach.
6. Opportunity for exploratory occupational decision making.
7. Facility design to fit curriculum and student needs.

E. Change Within the School Setting

1. Four-week pre-service team training program.
2. Team planning approach.
3. Open-ended occupational program.
4. Inter-relations with business, industry and labor.

F. On-Campus Work Experience

1. Development of positive attitudes toward employment.
2. Enhancement of post school adjustment to employment opportunities.
3. Job placement practices.
4. Development of positive attitudes on part of prospective employers.

II. Changes or modifications in these innovative practices and programs should be made to fit local conditions before considering them as a regular part of vocational-technical education.

III. Suggested innovative practices and programs to be investigated for possible application to vocational-technical education.

A. Provide training opportunities for teachers to broaden their knowledge of, and appreciation for, vocational areas other than their own.
B. All teachers and administrators should have at least one course in their teacher training program that provides a basic knowledge of vocational-technical education programs.
C. Consideration be given to broadening vocational-technical education to include a program of orientation to occupations at the junior high school level, or for all persons of all ages and all abilities.
D. Expand the cooperative work experience program to include the placement of students in all occupational areas within the community, with on-the-job supervision of these programs done by one coordinator.
E. Broaden the vocational-technical curriculum to include content for preparation of persons for leisure time activities during and after their work life.
F. Provide short-term work experience programs for students on the junior high level.

G. Youth organizations should be co-curricular, rather than extra-curricular, and an integral part of most occupational programs.

T.F. #5: Cost-Benefits Evaluation Criteria

The programs represented in these institutes are filling some of the long standing gaps in education. They are meaningful programs which are helping to abolish the 2x4x6 concept of education.

There has long been a need for meeting the needs of dropouts or pushouts. Some of these programs take pupils as they are, teach them skills and help them change their attitudes.

Other programs are responses to emerging technical developments. We believe that education should accept the leadership and cooperate with business and industry--utilizing advisory committees, who know the needs and requirements of work situations for curriculum planning.

Teacher educators should assume responsibility for attitudinal changes of all teachers: to create willingness and desire for cooperative development of a more effective education milieu for the students. Interdisciplinary methods in teacher training would eliminate at least part of the cost of in-service training at the local level. In order for teachers to adapt to new patterns, they must have training in small group dynamics, and they must learn to be flexible.

Schools must have flexible scheduling and facilities for efficient learning. More efficient learning materials must be devised.

Vocational education should be introduced in the early school year so that the pupil can select goals and more efficiently plan for their fulfillment.

The types of programs which seemed to be most flexible in terms of cost-benefits included:

1. Special needs programs for EMR's or underachievers make tax-receivers into tax-payers before, not after, the person enters the labor market.
2. Families of occupations provide a broad range of experiences and training which expand the option markets of learners and tend to preclude terminal education.
3. Retraining programs provide upgrading of skills, or training in broad fields, which increase the wage-earning capacity of learners.
4. Technician training at various post-secondary levels will reduce employers' costs by utilizing personnel in appropriate business-industrial positions; and at the same time, provide the learners with basic experience which may later be, economically, up-dated and up-graded.

Program Analyses.

Important characteristics of the programs presented during the institutes have been noted below. Most of these have implications for cost-benefits evaluations.

A. Characteristics of the Work Opportunity Center for dropouts included:

1. Benefits--
    a. 68 percent of the students have been returned to the public school mainstream.
    b. Job entry skills and placements were provided.
    c. Plans have been made to phase out the special school after 5 years--when regular schools should be geared to assume responsibility for dropouts, and dropout prevension.
    d. Efficient learning experiences have been provided, based upon learning research (instruction provided at optimum times) followed by guided self-learning and reinforcement rewards.
    e. Teachers were involved in student recruitment, guidance, program planning and evaluation.
    f. Educational techniques are developed and tested which have applicability to regular public education.
    g. Individuals were accepted as they were and individual growth promoted which emphasized attitudinal change.
    h. Adaption and application of existing knowledges and procedures of education was utilized, rather than development of completely new ideas.
    i. Course lengths were adapted to the needs of learners and could be modified as students change.

2. Cost-factors--
    a. Facilities were unlike regular school buildings. Expenses included modification of an existing building, and normal maintenance and utility costs.
    b. Equipment and supply expenses included: normal operating expenses; equipment and supply costs for food services, child care, dry cleaning, small motor repair, management-related and homemaking classes; testing; transportation expenses, and physical examinations for students.
    c. Personnel expenses included twelve-month salaries for 3 community aides, 4 administrators, 26 teachers and the secretarial staff. The 12 to 1 (student-teacher) ratio required a somewhat greater number of teachers than in comparable public school situations.
    d. Teacher training has required security training for three months prior to school opening, and in-service workshops have been held weekly.

3. Source of funding--
    Vocational Education Act; Title I of ESEA, Vocational

Rehabilitation; MDTA; OEO; NYC; CEP and CAMPS under the Department of Labor.

B. Characteristics of the Drafting-Design retraining program included:

1. Benefits--
    a. Training young adults for jobs in a field needed by industry.
    b. Thorough evaluations were made of students' success and programs within the limits of time provided by the project.
    c. Job supervisors were utilized, rather than plant managers, for program advisory tasks to enhance employability.
    d. Has proven that student selection criteria of colleges are unrealistic.
    e. Established the feasibility of changing a student who cannot succeed in one program (field-oriented) to another program (job-oriented).
    f. Indicated that programs do not have to follow a standardized pattern to fit the needs of technician occupations.
    g. Provided a substantial general education base for future up-grading, if desired by the student.

2. Cost Factors--
    a. Utilized existing facilities at the two cooperating training institutions.
    b. Equipment utilized in existing plants--supplies, normal operational expenses.
    c. Personnel included trade-experienced instructors for the job-oriented, and university personnel for the field-oriented trainees.
    d. Teacher training included an in-service workshop, weekly inter-disciplinary staff meetings and final evaluation.

3. Sources of funding--
    MDTA and Vocational Education Research Funds.

C. The Market High School for slow learners exhibited the following characteristics:

1. Benefits--
    a. Improved attendance and a lower dropout rate--the dropout rate was 2.88% versus a district rate of 14%
    b. 94.6% of the graduates have employment.
    c. Cooperative occupational training provided a positive bridge to employment.

d. Farm facilities were utilized for voluntary experiences for Market students and utilized by regular elementary students during summers.
e. Teaching experiences at Market were credited toward student teaching requirements for EMR certification.
f. Students learned personal management topics: budgeting, saving, taxes and consumer buying.
g. Students developed confidence in themselves, and understandings of their capabilities and responsibilities as future citizens.
h. Facility and equipment maintenance was minimal due to student attitudes and identification with the school.
i. Pupils participated in activities they would have been unable to take part in, fully, in a regular high school: student council, band, athletics, clubs, etc.

2. Cost factors--
   a. Facilities included a repainted old abandoned school and government surplus farm. Much of the remodeling and care of the latter was handled by students
   b. Equipment was obtained used, through surplus, or sometimes purchased new.
   c. Personnel included a teacher-coordinator for the cooperative work-experience program and special education certified teachers hired for twelve months. The student to teacher ratio was 16 to 1.
   d. Teacher training provided through in-service workshops and special education extension courses.

3. Sources of funding--
   State special education and local district funds, and the Vocational Education Act.

D. Characteristics of Richmond Plan, pre-technical, programs included:

1. Benefits--
   a. More of these students attended college full-time than comparison students.
   b. Student grades improved.
   c. Gave capable, average, unmotivated students a chance for further education.
   d. Provided students with incentives to enjoy school through meaningful instruction.
   e. The educational approach has been adapted for other occupational fields, and to other student needs.
   f. Students have accepted responsibilities for their own learning.
   g. Teachers work more closely together in curriculum planning.

2. Cost factors--
   a. Utilized existing facilities.
   b. Equipment and supply requirements similar to regular school programs.
   c. Personnel made up of existing volunteer personnel.
   d. Teacher training included pre-service workshops and in-service coordination of subject content. Teacher released time for program preparation-coordination required 1 to 2 man-years per project.

3. Sources of funding--
   Initial workshops by foundation grants; state and local funds used; the evaluation project has been funded by USOE.

E. The new technology program, bio-medical equipment technician, exhibited the following characteristics:

1. Benefits--
   a. Would lower the cost of maintaining bio-medical equipment in local situations and improve equipment maintenance efficiency.
   b. Helped identify an unrecognized need in the medical community.
   c. The curriculum development methodology produced courses and course materials that may be utilized nationally.
   d. Utilized field resources to improve instruction and to minimize in-school instructional costs.
   e. Explored channels for up-grading graduates of the 2-year program in 4-year institutions, if the student so desired.

2. Cost factors--
   a. Utilized existing facilities in the school plant, hospitals and others, as needed.
   b. Selected basic equipment for the school; utilized equipment in hospitals, or on loan from suppliers, for specialized demonstration or instruction.
   c. Personnel utilized included the college personnel, electronics technicians, a program coordinator and paid consultants from industry.
   d. Teacher training included in-service, inter-disciplinary training and curriculum evaluation.

3. Sources of funding--
   Federal project; state and local funds.

F. The Quincy comprehensive vocational technical program showed the following characteristics:

1. Benefits--
    a. Curriculum planned so that school-leavers will have saleable skills.
    b. Building designed to facilitate communication between teachers.
    c. Curriculum designed to provide optimum occupational choice, and delay terminal choices.
    d. Incorporated educational technology which provided individualized instruction related to student development and student goals.

2. Cost factors--
    a. New Vocational technical facility located adjoining the academic high school.
    b. Equipment and supplies for the 11 occupational families (29 shop subjects) leading to 255 specific jobs.
    c. Personnel included the director, support personnel and teachers for the program.
    d. Teacher training has required retraining guidance personnel and teachers in inter-disciplinary techniques and methods for assuming the role of directors of learning (in-service and by seminars). Existing teacher training institutions do not prepare these kinds of people.

3. Sources of funding--
    State and local funds, a 5-year USOE project grant and a $5 million bond issue.

G. The program designed to bring about change in the school setting, Project FEAST, had the following characteristics:

1. Benefits--
    a. The number of dropouts and problem-students decreased.
    b. Academic teachers were involved in vocational curriculums, and gained occupational experiences which encouraged relatedness in instruction.
    c. Open-ended programs provided which enabled students to go to work, to junior college or to senior college.
    d. Placement and/or scholarships were provided for graduates.
    e. A great variety of ethnic groups and capability levels were accommodated.
    f. Teachers in other occupational areas were encouraged to adapt the program to their fields.
    g. Home economics teachers were up-graded to teach quantity foods and other gainful foods service-hospitality occupational education.
    h. Maximum utilization of outside support personnel was accomplished--for instruction, placement and public relations.

2. Cost factors--
    a. Existing facilities were used, including classrooms and the school cafeteria.
    b. Utilized the school equipment, supplemented by industry-loaned equipment. Consumable supplies were sold.
    c. Personnel involved included the business-math, English and home economics teachers; the cafeteria manager; and the counselor.
    d. Teacher training involved a 4-week summer workshop for the whole team and in-service inter-disciplinary work sessions.

3. Sources of funding--
    Foundations, vocational and local funds.

H. Characteristics of the Oakland on-campus work-study program for EMR's included:

1. Benefits--
    a. Employees trained have good work records--high attendance rates and few work errors.
    b. Trainees have proven to be very good in working with handicapped children.
    c. Maximum utilization of inter-agency cooperation in training, placement and job adjustment.
    d. Trainees proved to be superior workers in certain types of repetitive occupations.
    e. Students were not segregated from other students and can fit into society better upon leaving school.
    f. Public support was generated with unions, business and industry, government employers and the community to support training and hiring of graduates.

2. Cost factors--
    a. Existing facilities of the whole district utilized for on-campus programs and community facilities for off-campus work-experiences.
    b. School and industry equipment and supplies utilized; travel and wage costs must be paid.
    c. Personnel include: special education teachers, rehabilitation supervisor and counselor, and work adjustment counselors.
    d. Teacher training required EMR special education graduates with re-education for vocational education programs.

3. Sources of funding--
    State and local, Department of Vocational Rehabilitation and state special education funds.

CHAPTER IV

EVALUATION

The three evaluation devices used for these institutes are shown in Appendix F. The first two were completed at the conclusion of each institute. The third form was completed by conferees approximately six months after the conclusion of the final institute session.

The subsequent analyses of conference evaluation data has been premised upon logical, rather than statistical criteria. The reporter justifies this procedure upon several bases: 1. the most important function of this analysis has been to identify major patterns which relate to institute objective fulfillment, rather than to establish criteria standards, 2. the information analyses is extremely subjective in nature and, consequently, would have little more true meaning were it subjected to statistical treatments, and 3. information on variables among conferees, presenters and situations is insufficient to provide precise data quantification and classification.

Conference Evaluation

The Conference Evaluation form was developed by Penn State Conference Center personnel for general assessment of conferences held at that institution. Its major focus is upon the operational factors affecting conference success. It also provides conference leaders with some idea of the major strengths and weaknesses of conference topics and speakers.

Attendance Motivation. The first question on this evaluation form deals with motivating factors for conferees attendance at the institutes. Table 4.01 shows that the primary motivational impetus was provided from brochure information prepared by the institute staff. More than three-fourths of the respondents indicated that this was their most important contact source.

Information supplied by State supervisors or directors, and the U. S. Office of Education, together, provided stimulus for attendance for over 25 percent of the conferees. The state personnel were slightly more effectual (5%) than USOE sources.

The remaining, and not particularily effectual, sources included information from professional organizations, technical journals, RCU's and local school administrators.

Interesting conclusions might be drawn from comparisons of regional responses on the items noted above. Brochures were primary impetus sources in both conferences but, proportionately, less effective in the Western Region. At the same time, USOE and state personnel provided approximately three times as much impetus in the Western region, as they did in the Eastern region.

Table 4.01
Promotional Form Encouraging Attendance

SOURCE	REGION-RESPONSE East	West	TOTAL FREQ.	% of FREQ.
Brochures.	23	21	44	63.8
Professional Organizations . . .	1	1	2	2.9
Technical Journal.	0	1	1	1.5
USOE Information	2	6	8	11.6
State Superv./Director	3	8	11	16.0
RCU.	0	2	2	2.9
Local School Administrator . . .	0	1	1	1.4
TOTALS	29	40	69	100.0

Advanced Information Adequacy. In response to question 3, forty-eight (76.2%) of the conferees felt that information provided prior to the institute was adequate (Table 4.02). Thirteen individuals expressed dissatisfactions, and two did not respond to this question.

Table 4.02
Adequacy of Advanced Information

RESPONSE	REGION-RESPONSE East	West	TOTAL FREQ.	% of FREQ.
Adequate	21	27	48	76.2
Inadequate	7	6	13	20.6
Non-respondents.	2	0	2	3.2
TOTALS	30	33	63	100.0

The types of additional pre-information desired by the thirteen dissenting participants included: pre-information on the actual program and speakers (9), detailed specifications of institute objectives (2), and pre-institute copies of speaker's presentations. Table 4.03 shows that a larger negative viewpoint was expressed by Eastern region conferees.

Table 4.03
Desired Types of Additional Pre-Information

RESPONSE	REGION-RESPONSE East	West	TOTAL FREQ.	% of FREQ.
Program and Speakers	7	2	9	69.2
Detailed Obj. Specification. . .	0	2	2	15.4
Speakers Papers; pre-instit. . .	0	1	1	7.7
Non-respondents.	1	0	1	7.7
TOTALS	8	5	13	100.0

Valuable Program Topics. Table 4.04 summarizes the responses of the conferees to question 4: the most worthwhile programs and topics.

All twelve presentations of the institutes received some recognition (part A of the table); however, those programs most frequently mentioned dealt with recapturing dropouts, comprehensive vo-tech education and providing change within the school setting. Each of these was mentioned by approximately one-third of the participants. About one-fifth of the conferees indicated strong interest in programs for making productive citizens of slow learners and (Richmond) pretechnical education.

Table 4.04
Most Valuable Programs and Topics

A. Programs:	RANK	FREQ. STATED	% of FREQ.	% of Conferees*
(Background Presentations)				
Dimensions of Curr. Actions. . . .	7	1	0.9	1.6
Roles: High School & Jr. High. . .	6	5	4.3	7.9
Roles: Post High School	7	1	0.9	1.6
Voc. Education Models.	4	7	6.0	11.1
(Programs)				
WOC for Dropouts	1	23	19.8	36.5
Drafting-Design Retraining	6	5	4.3	7.9
Market H.S.; slow learners	3	11	9.5	17.4
Richmond Plan.	3	11	9.5	17.4
New Technology (BMET).	5	6	5.2	9.5
Comp. Vo.-Tech.; Quincy	2	20	17.2	31.8
Change Within Setting; FEAST . . .	2	20	17.2	31.8
On-Campus Work-Study	5	6	5.2	9.5
TOTALS	--	116	100.0	*(N=63)

B. Topics	FREQ. STATED	% of FREQ.	% of Conferees*
1. Student Recruitment/Selection . . .	8	9.6	12.7
2. Curriculum Organization (interdisciplinary, co-op. teaching, comp. district, flexible content/scheduling, occup. families, systems)	38	45.8	60.3
3. Individualized Instruction.	2	2.4	3.2
4. Curriculum Development (Bases: behavioral goals, performance objectives, valid pre-requisites). . . .	15	18.2	23.8
5. Co-op. Curriculum Planning.	3	3.6	4.8
6. Curriculum Content (pre-technical technology, special needs).	14	16.8	22.2
7. Special Facilities, or Settings . .	3	3.6	4.8
TOTALS	83	100.0	*(N=63)

Part B of the table indicated the major areas of interest as expressed by the institutes' participants.

Types of curriculum organization had the greatest value for thirty-eight (60.3%) of the conferees. Almost one-fourth recognized the value of information obtained in the topical areas: curriculum development and curriculum content. Some value was attached to the topics: student recruitment and selection, individualized instruction, cooperative curriculum planning, and special educational facilities or settings.

Topic and Speaker Dissatisfactions. Conferees' feelings about topics and speakers have been tabulated in Table 4.05.

Table 4.05
Topic and Speaker Dissatisfactions

A. Programs That Could Have Been Omitted.

PROGRAM NUMBER	FREQ. STATED	% of FREQ.	% of CONFEREES
1	0	0	0
2	8	33.3	12.7
3	1	4.2	1.6
4	5	20.9	7.9
5	1	4.2	1.6
6	0	0	0
7	0	0	0
8	9	37.4	14.3
TOTALS	24	100.0	(Av. 4.7)

B. Topic-Speaker Reactions.

REACTION	FREQ.	% of FREQ.
1. Dissatisfactions:		
a. Content (topic not new, not a vo-tech program, duplication)	21	33.4
b. Inadequate presentation .	13	20.6
2. Overtly Satisfied.	18	28.6
3. Non-Respondents.	11	17.4
TOTALS	63	100.0

Taken on an average, less than 5 percent of the participants felt that some program presentations should have been omitted from the institutes. The greatest amount of dissatisfactions were expressed with programs 2 and 8--by about one-eighth of the people. The only other presentation, with any amount of notable concern, was program 4; less than 10 percent indicated dissatisfactions, thereof.

The main sources of dissatisfactions appeared to result from failure of conferees to identify innovations. One person felt that program 8 was not a vocational program. Several people felt that programs 1, 3 and 8 were duplications.

One-fifth of the participants expressed dissatisfactions with presentation styles of the consultants for programs 2, 4, and 8. This feeling may have influenced participant suggestions (noted in Table 4.03, A) that these programs be omitted.

Conference-Interests Relationships. In responding to question 7, fifty-six (89%) of the conferees felt that the institute dealt with their main interests in an understandable and interesting way (Table 4.06). Five individuals (7.8%) indicated that the conference missed their main interests. One person felt that the institute was too basic and presented few, if any, new ideas.

Table 4.06
Nearness to Conferees' Interests & Backgrounds

REACTION	FREQ.	% of FREQ.
A. Understand everything, but conference missed my main interest	5	7.8
B. Dealt with my main interests in understandable & interesting way.	56	89.0
C. Too basic; few if any new ideas.	1	1.6
D. Non-Respondents.	1	1.6
TOTALS	63	100.0

Total Conference Reactions. Conferee's reactions to the conference, as a whole, have been itemized in Table 4.07. Twenty-seven (42.8%) rated the institute as an excellent project from which much was gained. A similar number found many parts valuable. Three indicated that less was gained than had been expected.

Table 4.07
General Reactions to Total Conference

REACTION	FREQ.	% of FREQ.
A. Excellent program; much gained	27	42.8
B. Many parts valuable; others not.	27	42.8
C. Something gained: less than expected.	3	4.8
D. Non-Respondents.	6	9.6
TOTALS	63	100.0

Institute Administration Reactions. The administrative concerns surveyed in question 9 included: 1. operational functions, such as registration, meeting room arrangements, audio visual services, etcetera; 2. on-campus housing; 3. on-campus food service; and 4. food and housing off-campus. Survey results have been summarized in Table 4.08.

Operational functions were rated, good to excellent, by almost three-fourths of the conferees. Ten people at the Western conference registered dissatisfactions with: a. the distances between facilities on campus (7), b. the lighting and heating (2), and c. the chairs (1).

On-campus housing was used by at least 63.5 percent of the participants. Twenty-three (36.5%) of these people used other housing, or did not respond. There were no negative responses regarding on-campus housing.

In part C of this question, conferees were instructed to rate only food services on-campus. Twenty-seven people (42.8%) did not complete this section. One person, who did respond, rated the services as unsatisfactory. The remaining 35 people (55.6%) rated food services as good to excellent.

Off-campus food and housing were used more extensively by the Eastern conferees, than by those at the Western institute (63.5% vs. 27.2%). No individuals who used off-campus accommodations indicated negative reactions to these resources. Twenty -eight individuals (44.4%) rated off-campus accommodations as good to excellent.

Improvement Suggestions and Comments. The answers provided by respondents to questions 10 and 11 tended to overlap; consequently, the responses for both questions have been integrated in Table 4.09.

A. Physical Organization.

Four types of responses seem noteworthy in this part of the analysis. These included suggestions that: 1. more time be provided between presentations, 2. task force work time be increased, 3. presentations were too long, and 4. more hospitality activities be incorporated in the total program.

In actuality, suggestions 1 and 2, above, were closely related factors--more time was desired between presentations, primarily, for task force activity. Together these suggestions accounted for more than one-half of those made regarding physical restructuring. These suggestions were stressed to a greater degree by Eastern conferees than by those at the Western meeting (52.4% vs. 24.2% of the conferees). This difference may be considered the resultant of modification made in the time schedule in response to the evaluation obtained during the earlier Eastern institute. The rescheduling, also, probably accounted for no complaints about the length of presentations at the Western institute.

Table 4.08
General Conference Administrative Rating

A. Operational Functions (registration, mtg. rooms, A-V, etc.)

	REGION-RESPONSE		TOTAL	% of
REACTION	East	West	FREQ.	FREQ.
Good to excellent.	28	19	47	74.7
Unsatisfactory	0	10*	10	15.8
Non-respondents.	2	4	6	9.5
TOTALS	30	33	63	100.0

* Problems noted: distance between facilities (7), lighting-heating (2), chairs (1).

B. On-Campus Housing

	REGION-RESPONSE		TOTAL	% of
REACTION	East	West	FREQ.	FREQ.
Good to excellent.	19	21	40	63.5
Unsatisfactory	0	0	0	0
Not Applic./No Response.	11	12	23	36.5
TOTALS	30	33	63	100.0

C. On-Campus Food Services.

	REGION-RESPONSE		TOTAL	% of
REACTION	East	West	FREQ.	FREQ.
Good to excellent.	17	18	35	55.6
Unsatisfactory	0	1	1	1.6
Not Applic./No Response.	13	14	27	42.8
TOTALS	30	33	63	100.0

D. Housing and Food Services Off-Campus

	REGION-RESPONSE		TOTAL	% of
REACTION	East	West	FREQ.	FREQ.
Good to excellent.	19	9	28	44.4
Unsatisfactory	0	0	0	0
Not Applic./No Response.	11	24	35	55.6
TOTALS	30	33	63	100.0

Table 4.09
Conference Improvement Suggestions and Comments

A. Physical Organizations Suggestions.

RESPONSE	REGION-RESPONSE East	REGION-RESPONSE West	TOTAL FREQ.	% of FREQ.
1. More time betw. presentations	5	2	7	15.2
2. Increase time, Task Force . .	11	6	17	37.0
3. Presentations too long. . . .	5	0	5	10.8
4. Too many presentations. . . .	1	2	3	6.5
5. Too few presentations	1	0	1	2.2
6. More variety in scheduling. .	1	0	1	2.2
7. Hold meals at conf. center. .	1	0	1	2.2
8. More hospitality activities (tours, social sessions). . .	6	4	10	21.7
9. More audio-visuals.	0	1	1	2.2
TOTALS	31	15	46	100.0

B. Content Suggestions.

RESPONSE	REGION-RESPONSE East	REGION-RESPONSE West	TOTAL FREQ.	% of FREQ.
1. More shared experiences . . .	3	4	7	38.8
2. Personal interest not met . .	0	1	1	5.6
3. Information on other innov. (biblio. or USOE speakers). .	0	2	2	11.1
4. Pre-conf. information	2	0	2	11.1
5. Tours: innovative sites . . .	0	4	4	22.2
6. Students from innov. schools.	0	1	1	5.6
7. Displays by ed. publishers. .	0	1	1	5.6
TOTALS	5	13	18	100.0

C. Suggestions for Future Conferences.

RESPONSE	REGION-RESPONSE East	REGION-RESPONSE West	TOTAL FREQ.
1. Program salesmanship conferences . .	0	1	1
2. Conferences held on innov. sites . .	0	1	1
3. More conferences of this type on other programs	0	1	1
4. Conference on adult programs	0	1	1
5. Conf.: H.S. Emerging Occupations . .	0	1	1
TOTALS	0	5	5

D. Other Reactions:

	East	West	Total
1. Positive satisfaction expressed. . .	6	6	12
2. Non-respondents (questions 10 & 11).	15	26	41
TOTALS	21	32	53

Concern for hospitality, or social, activities was the second most important factor for suggested change. It was expressed by over one-sixth of the conferees. Some of their specific interests included: campus and community tours, banquets and "get-togethers".

B. Content Suggestions.

By and large, conference content suggestions do not seem to provide bases for notable consideration. Desire for more "shared experiences" by 11.2 percent of the conferees may well be an extension of social concerns indicated in A, above. The remaining specified suggestions are of interest, but not substantive.

C. Future Conference Suggestions.

The data indicated in part C of Table 4.09 provides no substantive data, but the suggested conference topics may provide cues for institutes of the future.

D. Other Reactions.

Twelve individuals (19.4%) took the opportunity to express positive satisfactions with the institutes. Forty-one (65%) did not offer improvement suggestions. Assuming that this latter group was not negatively oriented, it might be subsumed that about 84 percent were satisfied with the general operation and content of the institutes. This position would tend to validate the data in Table 4.06 where 89 percent of the conferees indicated that the institutes "dealt with my main interests in an understandable and interesting way."

Summary and Conclusions. The data collected through the Conference Evaluation form would tend to support the following conclusions:

1. Brochures performed a highly important function in participant recruitment for these institutes.

2. USOE and state supervisors or directors played a secondary role in participant recruitment, and the influence, thus exerted, is quite variable, regionally.

3. The information provided before the institute was, generally, considered adequate by conferees. In those cases where inadequacy was expressed, the main concern was with information on the program and speakers.

4. There is little, if any, basis for assuming that the presentations included in the institutes did not meet the needs, interests and expectations of the conferees.

5. The important concerns of the participants, in order of importance, were: a. factors dealing with how curriculums

are organized, and their parts inter-related, b. the fundamental bases for curriculum development--behavioral goals, performance objectives and pre-requisites, and c. content of newly evolving curriculums.

6. The administration of the institutes was felt to have been adequate. There is little doubt that increased opportunity for social activity could have enhanced it further.

7. The fact that these institutes were highly structured, and arduous, was not conceived as detrimental to the accomplishment of the institute goals by the participants. This acceptance of supra-organization may have been promoted by two operational characteristics of the institutes: a. high-pressures were applied at the beginning of the institute and relaxed as it approached its culmination, and b. the participants were gradually given responsibility for the operation of the institute as it progressed. However, the personal interests and natures of the participants had much to do with this acceptance of the regimen.

End-of-Institute Evaluation

The End-of-Institute Evaluation form was developed by the project director under advisement from the assistant director for evaluation. The purposes for which the questionnaire was designed included:

1. Particularization of individual program characteristics as they relate to curriculum and education.

2. Classification of innovation types and their relative importance.

3. Clarification of each program's status in relation to expectations for, and implementation in, vocational-technical education.

4. Identification of possible areas for future innovation.

5. Identification of conference members' projected roles and commitments in future innovation.

PART I, INQUIRY.

Curriculum Statuses. The first two questions in the questionnaire sought answers to the questions: 1. were the programs total curriculums and 2. what curricular components, if any, were lacking from particular programs? The percentage of agreements have been noted in Table 4.10. An agreement rate of 75 percent, or more, was set as the minimum substantive rate.

Table 4.10
Curriculum Statuses of Programs

(Values: % of Agreement... Criterion: 75% or more)

CURRICULUM COMPONENTS NOTED

PROGRAM	Total Curr.	Rel. Acad.	Soc. Dev.	Phys. Dev.	Pers. Dev.	Civic Dev.	Econ. Dev.	Sale Skill
1. WOC	75.5*	86.0	85.5	71.5**	87.0	86.0	85.5	80.0
2. Draft.-Des.	33.0	79.5	61.5**	60.5**	63.5**	64.0**	72.5**	82.5
3. Market H.S.	76.0*	85.5	81.0	84.5	81.0	82.5	79.0	83.0
4. Richmond. .	48.0	84.5	79.5	84.5	81.0	82.5	77.0	76.5
5. New Techn .	45.0	81.5	69.0**	69.0**	78.0	69.0**	75.0	81.5
6. Quincy. . .	52.0	89.0	90.5	90.5	89.0	90.5	92.0	86.0
7. FEAST . . .	59.0	86.0	86.0	78.5	84.5	84.5	89.0	83.0
8. Oakland EMR	41.5	79.5	82.5	75.0	78.0	79.5	77.5	75.0

* Total Curriculum ** Component Lacking

Two programs were identified as being total curriculums: the Work Opportunity Center for dropouts and Market High School for slow learners. However, review of the data on curriculum components indicated several inconsistencies.

The first inconsistency was the fact that program 1, which had been identified as a total curriculum, was indicated as lacking the curriculum component, physical development. A further disparity was evident with four programs (4, 6, 7 and 8) which were not identified as lacking curriculum components; yet, these were not recognized as total curriculums by respondents.

In the face of these inconsistencies no attempt has been made to generalize from the data regarding the curriculum statuses of the programs.

Learning Methodologies Observed. In seeking to learn more about the nature of the programs, conferees were asked to identify the methods used in the various programs to promote learning fulfillment. Results of this inquiry have been noted in Table 4.11; again, the 75 percent criterion of agreement has been used.

In terms of the nine methods suggested in the inquiry, a considerable range of methodology variation was indicated. This variation ranged from eight methods per program (program 3) to two methods per program (programs 2, 4, 5 and 8).

The method most commonly used by the programs of the institute involved integration, or correlation, of the subject content of general education with vocational-technical content. This was common to six of the eight programs. The least commonly used method was learning situation evaluation. This was recognized in only program 3.

Table 4.11
Methods Used for Learning Need Fulfillment

(Criterion: 75%, or more, agreement)

MAJOR METHODOLOGIES USED

PROG.	Indiv. Instr.	Prob. Solv.	Simul. Work	Work Exp.	Wk.Sim. Lrn.Sit.	G.Ed./ Vo-Ed.	Learn. Reinf.	Beh.Chg. Eval.	Lrn.Sit. Eval.
1	93.5	70.0*	84.0	90.5	79.0	79.5	79.5	85.5	73.0*
2	73.0*	76.0	76.0	36.5*	72.5*	68.5*	63.5*	55.0*	59.5*
3	92.0	67.0*	90.5	86.0	88.5	84.5	79.5	84.5	76.0
4	68.0*	75.5	69.5*	31.5*	63.0*	80.5	66.5*	66.5*	61.5*
5	61.0*	73.5*	70.0*	71.5*	78.0	75.5	72.0*	49.0*	57.0*
6	76.5	81.0	74.5*	49.0*	82.5	86.0	75.0	63.5*	62.0*
7	87.5	67.0*	81.0	83.0	79.5	92.0	74.5*	83.5	70.0*
8	86.0	50.5*	70.0*	92.0	67.0*	55.5*	73.5*	71.5*	65.0*

* Methodology _not_ noted.

Individualized instruction and work simulated learning situations were each noted in five (62.5%) of the programs. Work simulation projects and work experience were each noted in four programs. Problem solving, learning reinforcement and behavior change evaluation were evidenced in three programs.

In general, a wide variety of learning related methodologies were provided, and noted, by the participants in the institute programs.

Programs Related to Vo-Tech Levels. The conferees were asked to indicate the educational levels at which concepts from the programs presented might have application without markedly modifying such a program.

Application of a 70 percent criterion of agreement (Table 4.12) provided the information that the most appropriate level for each program approach was precisely that level at which it is currently functioning. In each case, conferees' recommendations and presentation levels were identical. Six programs were most appropriate to grades 9-12; two were most appropriate to post secondary; and one applicable under grade 9.

Programs Related to Student Types. The fifth question in the Inquiry section sought conferees' perceptions of the applicability of particular program approaches to various types of learners (Table 4.13).

By and large, the respondents identified the programs as most appropriate to the student types which they were currently seeking to serve. Two programs were deemed most suited to one type of student. The remaining six were each perceived as appropriate for two types of students.

Five programs seemed applicable to average students. Four appeared to have utility for reluctant capable learners. Two programs had implications for each learner type: slow learner and EMR; but not necessarily for both. One program had recognized applicability for high ability, motivated students. No application was apparent for physically handicapped students.

Table 4.12
Relationships: Programs to Education Levels

PROGRAMS	EDUCATION LEVELS (Criterion: 70%, or more)					
	Under Gr. 9	Grades 9-12	13-14 Non-Deg.	Assoc. Deg.	Adult Re-Tr.	Adult Upgrad.
1	56.5	89.0*	47.5	4.5	45.5	39.5
2	6.5	26.0	78.0*	27.0	71.5*	62.5
3	70.5*	88.5*	20.5	6.0	14.5	17.0
4	29.0	87.0*	47.0	31.5	28.0	25.5
5	3.5	23.0	76.5*	73.5*	60.0	49.0
6	24.0	89.0*	62.5	29.5	46.0	41.5
7	16.5	92.5*	66.5	43.5	45.5	39.5
8	48.0	92.0*	31.5	45.5	16.0	22.0

* Appropriate Levels

Table 4.13
Relationships: Programs to Student Types

PROGRAM	STUDENT TYPES			(Criterion: 75%, or more)		
	EMR	Slow Learner	Reluct. Capable	Aver-age	Hi-Abil. Motiv.	Phys. Handic.
1	45.5	81.0*	92.5*	46.0	14.5	43.0
2	5.0	38.0	52.0	89.0*	65.5	36.5
3	88.5*	79.0*	38.5	11.5	3.0	35.5
4	9.5	33.5	76.5*	93.5*	54.0	30.5
5	5.0	8.0	27.0	78.0*	87.5*	29.0
6	17.5	56.0	76.5*	97.0*	67.0	43.0
7	36.0	65.5	87.5*	89.0*	49.5	35.5
8	84.5*	62.0	14.5	12.5	10.0	39.5

* Appropriate Types

Programs Related to Facilities. This question sought to identify the types of educational facilities most suited to the various program approaches. The perceptions of the conferees have been summarized in Table 4.14. The criterion of suitability was set at 70 percent agreement.

Four programs were each identified as appropriate to two types of facility situations. In the case of program 1 (for dropouts), special school facilities for homogeneous grouping and residential occupational schools were suggested. In programs 6 and 7 (Quincy schools and the FEAST program), both were probably suited to full-time vo-tech schools and comprehensive secondary schools--with a slight preference indicated for the latter. Program 8 for EMR students was perceived as appropriate to either comprehensive secondary school, or special homogeneous grouping schools. Each of the remaining programs had single best designations.

Four of the eight programs were identified as suitable for comprehensive secondary schools. Three programs were suited to special schools for homogeneously grouped students. Two programs were identified as appropriate for each of the categories: full-time vo-tech and community college. One program was identified in relation to residential occupational schools. No programs were identified as suited to part-time vo-tech schools, or colleges and universities.

Table 4.14
Programs Related to Types of Facilities

	FACILITY TYPE (Criterion: 70%, or more)						
PROGRAM	Comp. Sec.	P/Time Vo-Tech	F/Time Vo-Tech	Comm. Coll.	Univ.-Coll.	Sp. Sch. Homo.-Grp.	Res.Sch. Occup.
1	25.0	39.0	39.0	40.5	6.5	72.0*	75.0*
2	42.0	65.5	65.0	79.5*	38.0	30.0	49.0
3	33.0	19.0	20.5	1.5	3.5	79.5*	54.5
4	87.0*	43.0	62.0	36.5	10.5	27.0	39.0
5	21.0	32.5	60.5	84.0*	57.5	31.5	36.0
6	79.0*	47.5	75.0*	33.0	14.0	28.5	43.0
7	87.5*	61.0	71.5*	45.5	26.0	51.0	52.5
8	81.0*	42.5	50.5	11.0	10.0	73.0*	62.5

* Most Suitable Type

Program Innovations Noted. In question 7 of Part I, participants were asked to check the innovations noted in each program of the institute. A summary of their responses has been assembled in Table 4.15.

Based upon a 70 percent criterion of agreement, the number of innovations ranged from nine to two, out of fifteen possible categories. One program exhibited nine categories. Two involved seven categories. Two more used four categories, and the remaining three programs each utilized two recognized innovations.

The kinds of innovations identified were distributed as follows: 1. The categories, new academic content, new funding procedures and new program evaluation, were each found in five programs, 2. new student recruitment techniques were exhibited in four programs, 3. new vo-tech content, learning evaluation and instructional methods were each discovered in three programs, 4. new guidance procedures,

Table 4.15

General Types of Innovations Noted in Programs

	(Criterion: 70% or more)			PRACTICES AND PROCEDURES NOTED									(* Recognized innovation)		
PROG.	Acad. Subj.	Vo-Tech Subj.	Content Determ.	Content Organ.	Sched-uling	Class Organ.	Student Recruit.	Guid-ance	Fund-ing	Prog. Eval.	Learn. Eval.	Comm. Involv.	Bus.-Ind. Involv.	Student Needs	Instruc. Methods
1	78*	77*	43	38	19	22	22	51	61	66	49	40	46	35	48
2	74*	74*	53	46	55	70*	72*	77*	81*	82*	58	82*	66	63	70*
3	73*	67	50	28	26	42	68	41	68	52	44	54	20	60	77*
4	62	65	40	62	28	36	81*	56	74*	52	59	86*	86*	47	68
5	44	67	50	62	73*	69	84*	89*	83*	93*	89*	59	55	62	73*
6	77*	63	54	73*	39	48	85*	63	86*	84*	80*	66	89*	57	57
7	65	58	46	46	21	35	64	56	56	72*	76*	35	49	36	33
8	77*	79*	66	58	45	60	68	58	70*	81*	63	38	40	43	58

Table 4.16

Most Important Innovations for Vo-Tech Education

	MOST IMPORTANT INNOVATIONS NOTED												(% of agreement)		
PROG.	Acad. Subj.	Vo-Tech Subj.	Content Determ.	Content Organ.	Sched-uling	Class Organ.	Student Recruit.	Guid-ance	Fund-ing	Prog. Eval.	Learn. Eval.	Comm. Involv.	Bus.-Ind. Involv.	Student Needs	Instruc. Methods
1	0	3	3	12	6	0	0	21	0	0	6	0	6	30	27
2	0	0	2	6	2	0	3	0	0	42	3	0	0	11	5
3	3	0	3	3	0	6	3	3	0	0	0	6	6	36	30
4	2	3	8	50	3	0	0	6	0	0	0	0	2	12	6
5	2	50	18	16	2	0	0	0	0	0	0	0	13	3	21
6	0	6	27	60	3	0	0	3	0	0	2	0	2	16	13
7	0	2	6	28	2	0	0	0	0	0	0	2	19	9	0
8	0	0	0	0	0	0	0	3	0	0	0	5	5	21	18

community involvements and business-industry involvements were each noted in two programs, 5. new organization of subject content, new scheduling and new class organization were each found in one program, and 6. new methodology for determining subject matter and new student need fulfillment were not substantially recognized in any program. In all, thirteen categories of innovation were identified in the eight programs presented.

Most Important Innovations. In question A2, Part III, of the evaluation form, conferees were asked to identify the most important innovations noted in each program in terms of vocational technical education. This question has been transposed out of contextual order since it logically relates to the preceding analysis. The responses have been summarized in Table 4.16. The limited responses, do not provide much of an analytical base; consequently, only the highest responses (20% or more) have been reported.

Program 1, the program for dropouts, seems to have some pertinence for vocational-technical education in the categories: fulfillment of unmet student needs, instructional methods and new guidance procedures.

Program 2, drafting-design retraining, was frequently identified as utilizing program evaluation techniques which may have implications for vo-tech education.

Program 3, the school for slow learners, was most noteworthy for its fulfillment of unmet student needs, and for its instructional methods.

Program 4, pre-technical programs, was highly recognized for the methodology used for content organization.

Program 5, the BMET technology, was notable for its new vo-tech subject content, and to a lesser degree, for its instructional methods.

Program 6, comprehensive vo-tech education, received the highest degree of recognition in this question for its uniqueness of content organization. Of secondary importance, but related to content organization, was the methodology used for determining content.

Program 7, concerned with bringing about change in the school setting, was most notable for its methodology for curriculum content organization. The methods used for business and industry involvement approaches notability.

Program 8, on-campus work experience for EMR's, was recognized to some extent for its ability to fulfill unmet student needs.

The innovation categories which would appear to have the greatest potential for implementation of the programs into vo-tech education appeared to be: content organization, fulfillment of unmet needs and instructional methods.

PART II, PROGRAM CLARIFICATION.

Program Relationships to Vo-Tech Education. Part II of the questionnaire was concerned with clarifying the implementation potentials of programs in terms of their applications in vocational-technical education.

The following special program characteristics were identified by conferees within the context of implementation (Table 4.17).

Program 1 would require a great amount of teacher re-training before implementation could be achieved. Its success would be highly contingent upon cooperation received from business and industry. The program provides for an important unmet student need--recapturing dropouts.

Success in the implementation of Program 3 would require a high degree of community public relations. However, this program for slow learners fulfills unmet needs of vo-tech education.

The approaches used in the Quincy vo-tech program (Program 6) would be valid for most vocational-technical fields.

The success of Program 7, producing change in the school setting (Project FEAST), would be highly contingent upon business and industry cooperation.

The on-campus EMR work experience program (#8) should be included in most state plans for vo-tech education in order to fulfill unmet needs. Success in the implementation and execution of such programs could be expected to require a high degree of community public relations and the cooperation of business and industry.

Several implementation characteristics seemed noteworthy when viewed from the negative viewpoint (Part 3, Table 4.16).

It would appear that programs, such as drafting-design technology and the BMET technology, should not be a part of most local plans for vo-tech education.

The program approaches utilized in the school for slow learners, the BMET technology and on-campus work experience for EMR's would not appear to be applicable to most vo-tech fields.

Program 6, for comprehensive vo-tech education, would not require a high degree of teacher retraining.

Three programs would not appear to require a marked increase in personnel staffing. These included: Program 2, drafting-design retraining; Program 7, Project FEAST; and Program 8, on-campus work experience for EMR's.

The drafting-design retraining, Richmond Plan and BMET technology programs would not tend to require high degree of community public relations for their implementation.

Business and industry would not be expected to support the following types of programs without extensive selling: (#1) the

Table 4.17

Factors Related to Implementation Into Vo-Tech Education

(Number Values: % of Agreement ..... Criteria: Part 1, 70% or more; Part 3, 30% or more)

	PROG.	INCL. IN MOST V-T PLAN.	INCL. IN LOCAL PLANS	VALID: MOST FIELDS	REQ. TEACH. RE-TR.	INCR. STAFF-ING	REQ. COMM. P.R.	EXPECT BUS.-IND. SUPPORT	REQ. BUS.-IND. SUPPORT	VALID: MOST LEVELS	FULFILL UNMET NEEDS	LITTLE MODIF. REQ.
1-STRONG. AGREE	1	61	56	54	**70***	61	67	14	**80**	36	**91**	24
	2	42	12	41	34	13	32	36	63	9	41	39
	3	47	41	29	62	58	**81**	15	67	36	**84**	20
	4	40	47	51	53	25	25	25	27	34	53	30
	5	50	27	24	42	38	30	48	51	9	65	29
	6	63	56	**78**	33	19	52	35	61	47	51	50
	7	53	43	59	64	25	62	40	**74**	38	64	50
	8	**70**	45	33	46	32	**81**	14	**76**	19	**81**	31
2-AGREE/NOT SURE	1	24	29	30	26	30	16	32	10	13	6	37
	2	39	51	32	38	38	32	34	26	22	42	40
	3	40	45	28	29	26	8	37	27	22	11	40
	4	36	37	35	34	46	42	51	46	50	29	36
	5	27	33	34	35	38	40	27	22	17	19	48
	6	29	40	19	37	53	26	40	29	19	25	28
	7	35	43	29	22	42	27	29	21	30	22	26
	8	18	35	29	32	30	16	25	16	25	14	47
3 - DISAGREE	1	16	16	16	5	10	18	**54**	11	**51**	3	**40**
	2	19	**32**	27	29	**50**	**36**	**30**	11	**69**	18	21
	3	13	14	**43**	10	18	11	**48**	6	**43**	5	**40**
	4	24	16	14	14	29	**34**	24	27	16	18	**34**
	5	23	**40**	**42**	23	24	**30**	25	27	**74**	16	23
	6	8	10	3	**30**	29	22	25	10	**34**	24	22
	7	13	14	12	14	**33**	11	**31**	5	**32**	14	24
	8	12	20	**38**	22	**38**	3	**61**	8	**56**	5	**32**

* bold faced figures: Section 1 -- Notable feeling toward implementation
Section 3 -- Notable rejection of implementation

school for recapturing dropouts, (#2) drafting-design retraining, (#3) the school for slow-learners, (#7) Project FEAST and (#8) on-campus work-experience for EMR's.

None of the programs, with the exception of the Richmond Plan(#4), would appear to have validity for most age and grade levels of learners.

Four programs would tend to require large modifications before any general implementation into vo-tech education could be achieved. These programs included: (#1) the school for dropouts, (#3) the school for slow learners, (#4) the Richmond Plan and (#8) on-campus work experience for EMR's.

PART III, PROJECTIONS.

The third part of the End-of-Institute evaluation was concerned with the future of the programs reviewed in the institute, and the anticipated roles and actions of the participants in innovative curriculum-related activities after leaving the institute. This latter concern formed the basis for the 6th Month, Post-Institute Evaluation.

Recommendations for General Applicability. The first question in this section asked respondents to indicate the status of the program in relationship to their general applicability for vocational-technical education (Table 4.18).

Table 4.18
Applicability of Programs in Vo-Tech Education

	PROGRAMS							
RECOMMENDATIONS.	1	2	3	4	5	6	7	8
a. Continue in present format.	57.2	39.7	57.2	42.9	52.4	65.1	66.7	35.0
b. Never generally applicable.	19.0	23.8	14.3	12.7	19.0	7.9	9.5	20.6
c. Modif.-Extension required .	35.0	38.1	38.1	47.6	31.8	28.6	31.8	44.5
NET RESPONSE (a+c-b)	73.2*	54.0	81.0*	77.8*	65.2	85.8*	89.0*	58.9

Criterion: 70%, or more

*Applicable to vo-tech education

Based on the 70 percent criterion of agreement, none of the programs were recommended for practical application to vocational technical education in their existing formats. On the other hand, none of the programs were rejected as never generally applicable to vo-tech education--not one of the programs approached the 30% level of agreement which would have lent credence for rejection.

Since more than one answer was occasionally checked for this question, a net percentage response was developed for each program which provided the following general conclusions:

1. Five programs should probably be continued with

modifications or extensions which enhance their practical applicability.

2. Three programs would have doubtful applicability, generally, to vo-tech education. These programs included: (#2) drafting-design retraining, (#5) the BMET technology and (#8) on-campus work experience for EMR's.

New Directions for Innovation. The third question in this section of the questionnaire asked respondents to specify new directions for innovation based upon extensions or modifications of the programs presented, or on the basis of their own perceptions. Finally, they were asked to postulate areas of innovation in curriculum which need exploration before vo-tech role fulfillment will be possible.

Responses related to program innovation extension or modification, and new idea investigation, tended to inter-relate; consequently, these data have been tabulated together in Table 4.19. Ninety-six (65.2%) of the responses were identified as extensions or modifications of the institute programs; the remaining responses were considered new ideas to investigate.

Seventy-five percent of the responses in this section could be identified as relating to the curriculum design activities: curriculum development and planning. The greatest areas of concern in the design sector included: team planning using a variety of personnel and resources to develop integrated and flexible curriculums; development of pre-occupational education, and occupational orientation programs which will involve all students; and planning individual instruction systems. The second level of interest in the design sector pointed out the following concerns: development of a basic occupational education based upon occupational commonalities and behavioral goals; redesign of facilities for education and school organizational systems; and new content development for evolving occupations, unsatisfied expectations (adult, dropouts, MR's, etc.) and variable skills development. Some interest was expressed in exploring broader applications of work experience education and guaranteed education based upon performance standards.

The greatest interest in the curriculum engineering sector was with methodologies for new idea implementation and preparation of the final implementers--the teachers. Some concern was also expressed for inquiry into student recruitment and selection.

Conferees' perceptions of needed explorations in curriculum innovation have been summarized in Table 4.20.

More than one-third of innovation exploration recommendations were related to educational systems involving computer technology and individualized self-pacing instruction.

Evaluation systems for assessment of innovation, programs, cost-benefits and attitudes, and standards establishment were recommended

Table 4.19
Promising Future Directions for Innovation

	APPROACH-RESPONSE		FREQUENCY	
DIRECTION	Ext.-Modif. of Innov.	New Idea Investig.	X	%
(Curr. Design)				
1. Pre-occup. educ. & occup. orient progs. for all youth. .	23	0	23	15.6
2. Basic Occup. educ. based on commonalties & behavioral goals.	8	7	15	10.3
3. Team Planning (inter-disciplinary, inter-agency, intra-state, flexible programs & schedules.	21	8	29	19.6
4. Indiv. Instruction Systems . .	20	0	20	13.5
5. Broad applic. of work exper. .	1	2	3	2.4
6. Guaranteed educ. based on performance stds.	2	0	2	1.4
7. Redesigned Facilities & Schools Organizations.	3	6	9	6.2
8. New Content (technologies; adult; for dropouts, MR's, leisure, short-term skill dev.).	0	9	9	6.2
SUB-TOTAL			110	75.0
(Curr. Engineering)				
1. Teacher Training	13	4	17	11.4
2. Student recruitment & selection.	5	0	5	3.3
3. New idea implementation. . . .	0	15	15	10.3
TOTALS	96	51	147	100.0

by more than 20 percent of the respondents.

Other exploration suggestions included: 1. expansion of service occupation training programs, 2. development of strategies for bringing about change through public relations and the involvement of educational specialists, business, industry and the community, 3. inquiry into the nature of, and requirements for, developing open-ended programs and 4. explorations of the feasibility of work experience as a part of all vocational-technical education programs.

Table 4.20
Needed Exploration for Vo-Tech Role Fulfillment

AREAS NEEDING EXPLORATION	FREQ. STATED	% of FREQ.
1. Educational Systems (CAI, CA Guidance, individual pacing)	13	34.2
2. Evaluation Systems (innovations, programs, standards, cost-benefits, attitudes)	9	23.6
3. Systems for identifying emerging occupations and education adaptation to them	8	21.0
4. Expansion of service occupation training programs	3	7.9
5. Strategies for Producing Change (through public relations and resource utilization)	3	7.9
6. The nature of, and requirements for, developing open-ended programs	1	2.7
7. Feasibility of work experience as a part of all vo-tech programs	1	2.7
TOTALS	38	100.0

Personal Roles in Future Innovation. The final section of the evaluation device was designed to discover the kinds and degrees of commitment to innovation which the conferees planned to become involved in following the conclusion of the institutes. Four major types of commitment were investigated: 1. communication of information gained from the institute, 2. personal involvement in innovation, 3. involvement of staff or associates in innovation and 4. specific types of tangible commitments to innovation.

Information Communication. The conferees were asked if they planned to communicate information to educational staffs, and through what aegis. The response to these questions have been tabulated in Table 4.21.

All participants indicated that they planned to make positive communication efforts. By and large, most (77.2%) indicated that they would use indirect communication procedures: circulate literature, prepare written reports and oral communications. Almost one-fifth indicated that they planned to communicate institute information during workshops, seminars, or special staff meetings. Also mentioned as possible communication methodology were the following: 1. involvement of staff in comparative analyses of the institute programs and local programs; and 2. facilitate staff travel to sites of programs included in the institutes.

Table 4.21
Planned Communication of Institute Information by Conferees

A. Extent of commitment toward communication:

1. Will bring to the attention of educ. staffs	63
2. Do not plan to communicate it to staffs. . .	0

B. Procedures to be used for communications:

PROCEDURE	FREQ.	% FREQ.
1. Indirect Communications (circulate literature, prepare written reports, speeches). .	51	77.2
2. Direct Communications (workshops, seminars, meetings)	12	18.2
3. Other:. . . . . a. Comparative analyses of institute programs with "local" existing programs (2), b. Provide staff members with opportunities to visit sites of innovative programs in the institute (1)	3	4.6
TOTALS	66	100.0

Planned Personal Involvements. Conferees were asked if they planned to undertake one, or more, innovative projects during the next year; and if so, what kinds of projects. The responses to these questions have been summarized in Table 4.22.

Eighty-nine percent of the participants indicated that they planned, personally, to become involved in an innovative project (or projects) within the year following termination of the institutes. Four individuals (6.4%) indicated that insufficient lead-time would preclude such a commitment. Three individuals did not respond.

The major kind of involvement would be in activities related to the development of new occupational programs. Such activities would be concerned with, not only subject content, but also with subject correlation or integration--approaching total curriculum development. Specific areas of intent included: the service occupations, comprehensive curriculums in both scope and breadth contexts, families of occupations, evolving fields, co-op programs, open-ended curriculums and making youth activities co-curricular.

The second level of commitment to innovation included involvement in: 1. special needs programs for migrants, persons in correctional

Table 4.22
Planned Personal Involvement in Innovation During Next Year

A. General Commitment:

	FREQ.	% of FREQ.
1. Involvement will occur.	56	89.0
2. Do not plan such involvement	4*	6.4
3. Non-Respondents.	3	4.6
TOTALS	63	100.0

* (Reason: not enough lead-time.)

B. Kinds of involvements anticipated.

KIND	FREQ. STATED	% of FREQ.
1. Special Needs Programs (migrants, correctional, dropouts, slow learners, EMR's)	12	17.1
2. Guidance & Preparatory Programs (employment orientation, pre-vocational, student selection-counseling).	9	12.8
3. Develop New Occupational Programs (services, comprehensive curriculums, related-occupations, evolving fields, co-op, open-ended, co-curricular youth activity).	16	22.9
4. Teacher Training (direct[illegible] of learning, interdisciplinary planni[illegible]operative or team teaching).	11	15.7
5. Instruction Improvement (new units, new devices, educational packages)	10	14.3
6. Clarifying Objectives (behavioral bases, improved job analysis)	4	5.7
7. Evaluation to validate existing content and procedures	5	7.2
8. Restructured Facilities and Schools Organizations (residential, redefined service areas, itinerant classrooms) . .	3	4.3
TOTALS	70	100.0

institutions, dropouts, slow learners and EMR's; 2. teacher training in the regimen which will produce directors of learning, and cooperative interdisciplinary planners and teachers; 3. instructional improvement through the development of new educational units, new instructional devices and educational packages; and 4. guidance and pre-vocational or pre-technical programs which promote improved student selection and counseling.

Some attention was planned to be given to the following types of activities: 1. clarification of objectives through behavioral analyses and improved job analysis, 2. evaluating and validating existing course content and educational practices and 3. restructuring facilities and school organizations for better utilization and educational fit.

Encouraging Innovation by Others. The third question in this section of the evaluation form asked participants if they planned to encourage staff, or associates, to become involved in innovation during the next year. This querry was followed by two sub-questions: 1. what kinds of exploration and 2. how will this exploration be encouraged? The data for this question has been tabulated in Table 4.23.

Ninety-five percent of the conferees indicated that they planned to encourage others in innovation endeavors during the year following the institute. Three individuals indicated that they had no plans for engaging in such activity.

The major kind of activities to be encouraged was identified as new occupational program development with special emphasis upon interdisciplinary approaches, new technologies and families of occupations.

The second level of encouragement would be: 1. special needs programs or learning centers for socio-economic disadvantaged, dropouts, unemployed, underemployed and problem learners, 2. individualizing instruction and achievement advancement for instructional improvement and 3. development of evaluation devices and systems for the assessment of instruction.

Some encouragement would also be provided for: 1. development of guidance and world of work orientation programs and 2. involvement of innovation implementation processes to improve public understanding of, and participation in, educational decision making.

The chief mode, through which innovation activity would be encouraged, would be through staff motivational practices. These practices would include: 1. projection of a positive image toward innovation, 2. reorganization of time schedules to facilitate innovation and 3. provisions of resources and assistance for innovation.

Other modes would include: 1. establishment of in-service programs--workshops, seminars and visitations, 2. assigned

Table 4.23
Plans for Encouraging Innovation Exploration

A. Commitment to staff and associates exploration.

	FREQ.	% of FREQ.
1. Expect to provide positive encouragement. . . .	60	95.2
2. No plans in this regard	3	4.8
TOTALS	63	100.0

B. Kinds of exploration to be encouraged.

KINDS (developmental)	FREQ. STATED	% of FREQ.
1. Special Needs Programs (learning centers, socio-economic disadvantaged, dropouts, unemployed, underemployed, problem learners).	8	14.5
2. Guidance-Preparatory Programs (occupational orientation, trial work experience, selection-recruitment criteria & methodology.	5	9.1
3. New Occupational Programs (inter-disciplinary, new technologies, families of occupations). . .	20	36.4
4. Instruction Improvement (individualized instruction, achievement advancement)	8	14.5
5. Evaluation (devices and systems for instructional assessment)	10	18.2
6. Implementation Processes (public information and relations systems to improve public comprehension & participation in decision-making)	4	7.3
TOTALS	55	100.0

C. Methodology for exploration encouragement.

MODE	FREQ. STATED	% of FREQ.
1. Staff Motivational Practices (projection of positive image toward innovation, reorganize time schedules, provide resources & assistance). . .	35	39.8
2. In-Service Programs (workshops, seminars, school visitation).	13	14.8
3. Assigned Responsibilities (supervisory, administrative, teaching personnel).	10	11.3
4. Research (validate content & educational practices, attitudinal, for curriculum development and evaluation guidelines).	14	15.9
5. Establish Special Group Configurations (general educators, business-industry-community, Vocational educators, government personnel) . .	16	18.2
TOTALS	88	100.0

responsibility to administrative, supervisory or teaching personnel for innovation involvement, 3. promotion of research to validate content and educational practices, to assess attitudinal development, and to develop bases for curriculum development and evaluation and 4. the establishment of special work group configurations involving all types of appropriate work groups.

Tangible Commitments. The final question on the evaluation form asked participants to identify the tangible commitments toward innovation which they would like to make during the subsequent year. The general types of commitments were categorized into four sub-groups: financial, personnel, time and facilities. Responses to this question have been tabulated in Table 4.24

The major desired financial commitment identified by the conferees was to allocate a regular percentage of vocational funds for innovation. The next level of commitment was to seek alternative funding sources for obtaining funds for innovation; such as, new levies, interagency cooperation and private foundations. Some individuals indicated that they would seek to increase staff travel funds, or they would fund special programs.

The major personnel commitment would involve addition of personnel to the staff with assigned innovation responsibility. The majority of these would be personnel hired in administrative or supervisory capacities. Some other personnel commitments would include: 1. the identification and upgrading of progressive staff members into innovation-responsibility positions, or 2. the reorganization of staff and their utilization.

The major time commitment would be increased personal time commitment by the conferee in innovation activities. The next level of commitment would be to increase the time for innovation for staff: administrators, supervisors, coordinators and teachers. Other time commitment activities would involve: 1. increased school facilities utilization and 2. increased educational efficiency.

The most notable desired commitment in regard to educational facilities was to improve, obtain or build new facilities for innovation. The next level of commitment would involve the allocation of space in existing facilities for innovative programs. The third alternative presented by respondents was to obtain innovation space from other agencies, business or industry and use them cooperatively.

SUMMARY AND CONCLUSIONS.

The major generalizations found in this section have been premised upon the data analysis provided for the End-of-Institute evaluation.

1. There would appear to be some confusion as to the nature of a total curriculum and the components which comprise a curriculum. This may be resultant of inadequate questionnaire techniques,

Table 4.24
Tangible Commitments Conferees Would Like
To Make During The Next Year

A. Financial.

ACTIVITIES	FREQ. STATED	% of FREQ.
1. Seek Alternative Sources for Obtaining Funds (levies, inter-agency, private)	6	20.0
2. Commit regular percentage of vocational funds to innovation	22	73.4
3. Increase staff travel funds	1	3.3
4. Fund Special Prog. (work exper., guid.)	1	3.3
TOTALS	30	100.0

B. Personnel.

ACTIVITIES	FREQ. STATED	% of FREQ.
1. Identify-Upgrade "progressive" staff.	1	5.5
2. Add Personnel w/Assigned Innov. Responsibilities (supervisory, coordination, or advisory— 11, teachers— 3, re-hab counselor— 1, community aides— 1.	16	89.0
3. Reorganize Staff & Staff Utilization.	1	5.5
TOTALS	18	100.0

C. Time.

ACTIVITIES	FREQ. STATED	% of FREQ.
1. Increase supervisors, coordinators or administrators time for innovation	5	19.2
2. Increase teacher time for innovation.	5	19.2
3. Devote more "personal" time to innovation	12	46.2
4. Increase school facilities utilization.	2	7.7
5. Increase educational efficiency	2	7.7
TOTALS	26	100.0

D. Educational Facilities.

ACTIVITIES	FREQ. STATED	% of FREQ.
1. Improve, obtain or build new, facilities.	14	45.2
2. Allocate space in present facilities for innovative programs	11	35.5
3. Obtain space in cooper. with other agencies, business and/or industry for innovation	6	19.3
TOTALS	31	100.0

insufficient background on curriculum presented by the institute keynoter, or perceptual difficulties of respondents.

2. The conferees succeeded in identifying innovative usages of learning methodologies in all programs. The most commonly perceived in the various programs was integration, or correlation, of vocational-technical and general education subject matter. The least frequently noted methodology was learning situation evaluation.

3. The respondents felt that the programs' concepts presented were most appropriate to the educational levels at which they were presented. No projections to alternative levels were identified.

4. The program approaches were identified as most suited to the student types for whom the programs had been developed. No substantive alternative applications were recommended. The institute programs appeared to encompass all the student types except physically handicapped students.

5. In relation to educational facilities, there was a perception of need for special learning environments for students with particular learning problems (q.v., dropouts, EMR's, slow-learners, reluctant learners). A comprehensive secondary school situation was identified as the best setting for the types of innovation reviewed in the institute. Full-time vo-tech schools were identified as adequate settings for some programs, but part-time vo-tech schools received no recognition as a best site for any of the programs.

6. The following general types of curricular innovation were evidenced: (a) new academic content, new funding procedures and new program evaluation techniques were the most noted types; (b) no identity was perceived for the categories: student needs fulfillment and new methodology for determining subject content. Thirteen types of innovation were identified in the various programs.

7. The most important innovations noted, in terms of vo-tech education, were: new content organizations, fulfillment of unmet needs and the utilization of new instructional methodology. (Some conflict in perceptions of the importance of the innovation, fulfillment of unmet needs, appears to exist in conclusions 6 and 7. This conflict may be more apparent than real since the question contexts were slightly different.)

8. A high degree of concensus was not found in regard to relationships between the programs and implementation factors related to the general vocational-technical arena. Strongest implications were drawn from negative viewpoints which suggested the following conclusions: (a) the primary applicability of the institute programs was for specialized age groups or types of learners, (b) implementation of most programs would require substantial amounts of community, business and industry public relations and (c) at least half of the programs would require substantial modification before implementation could take place.

9. In terms of the practical applicability of the institute programs, the following perceptions were noted: (a) none of the programs should be continued in their present formats, (b) all of the programs have general applicability to vo-tech education and (c) the least applicable programs appeared to be: the drafting-design retraining, the new BMET technology and on-campus work experience for EMR's.

10. The curriculum design sector was perceived as the most important area for concentrated effort in future innovation activities. Such activities should extend or modify concepts and approaches noted during the institutes, or may include totally new ideas. The primary center of interest was with planning activities to produce new content, fulfill new objectives and provide more effective instruction. The major concern in the curriculum engineering sector was with curriculum implementation strategies; especially, with implementation at the teaching level.

11. The area of greatest need for future explorations in innovation was felt to be educational systems. Evaluation systems and methodology, and the development of emerging occupational identity-adaptation procedures, were also identified as important exploratory areas leading to better vo-tech role fulfillment.

12. Communication of information gained during the institutes was expected to be undertaken by all of the conferees. The major mode for this action would be through indirect communication methods. The secondary mode for transmissions would be personnel involvement in workshops, seminars and other meetings.

13. Most institute personnel anticipated personal involvement in one, or more, innovative projects during the year subsequent to the institutes. The primary thrust of this involvement would be for programs development. Secondary efforts would be in the areas of teacher training, or retraining, and instructional improvement.

14. Most of the institute participants plan to provide positive encouragement to staff, or associates, for innovation involvement during the year following the institutes. Special encouragement will be given to program development activities. This encouragement will be provided chiefly through staff motivational practices which provide a climate and opportunity for innovation.

15. In terms of tangible commitments to post-institute innovation, the conferees most desire to provide the following types of assistance: (a) commitment of a regular portion of vocational funds for innovations, (b) addition of staff members with assigned responsibility for innovation, (c) increased time allocations for themselves and staff members in order to undertake innovation activities and (d) development of increased space, or space allocations, for innovative programs.

Post-Institute Evaluation (6th Month)

The post-institute evaluation form was developed by the project director to assess the innovation progress of conference participants approximately six months following the conclusion of the institutes. As with the other evaluation devices, a 100 percent population sample has been represented in the responses.

The questionnaire focused upon the following types of topics: 1. communication of institute information, 2. personal involvement in innovation, 3. innovation activities promotion for staff and associates and 4. tangible evidences of innovation commitment.

Since the elapsed time between the conclusion of the institutes and the final evaluation was quite short, respondents were asked to answer each question in two ways: 1. in terms of their current involvements and 2. in terms of their anticipated involvements within 12 months from the date of administration of this form.

INFORMATION COMMUNICATION.

Sixty-one (96.8%) of the conferees have engaged in at least 521 communication activities related to institute topics since the termination of the institutes (Table 4.25). Stated another way, this means that an average of 8.5 contacts were made per active conferee.

Table 4.25
Institute Information Communications Made

	RESPONSE FREQ. Contacts			MINIMUM NO. OF CONTACTS (1-5 contacts=1; 6+=6)					
	Current		Antic.	Current		Antic.		Total	
CONTACT METHOD	1-5	6+	1-5	N	%	N	%	N	%
Circ. Instit. Literature.	47	14	0	131	25	0	0	131	25
Written Reports	38	5	1	68	13	1	17	69	13
Staff Meetings.	51	7	1	93	18	1	17	94	18
Workshops/Seminars. . . .	16	1	3	22	4	3	50	25	5
Informal Interaction. . .	27	30	1	207	40	1	16	208	39
TOTALS	179	57	5	521	99	6	1	527	100

The types of contacts made included: 1. informal direct interaction with staff or associates (40%), 2. circulation of literature obtained at the institutes (25%), 3. staff meetings which included discussions of institute programs (18%), 4. written reports (13%) and 5. workshops or seminars of at least three-day duration which included topics related to the institute programs (4%). Formal communication actions made up more than one-third of the contacts, while informal processes accounted for almost two-thirds.

Little additional communication activity seems planned for the twelve month period following the date at which this questionnaire was answered.

PERSONAL INVOLVEMENTS.

Assessment of conferees' own involvements in innovation, since the institutes, has been made in terms of two general categories of activity: curriculum design and curriculum engineering.

Curriculum Design. Current and anticipated relationships have been summarized in Table 4.26.

Table 4.26
Personal Involvements in Curriculum Design Projects

	RESPONSE FREQUENCY Projects				MINIMUM NO. OF PROJECTS (1-3 Projects= 1; 4+= 4)					
	Current		Antic.		Current		Antic.		Total	
PROJ. TYPE	1-3	4+	1-3	4+	N	%	N	%	N	%
Identif. & Specif. of Objectives. . .	25	25	6	0	125	35	6	20	131	34
Identif. & Specif. of Content	23	24	6	2	113	31	14	47	127	32
Redesign Content Organization . . .	22	25	6	1	122	34	10	33	132	34
TOTALS	70	74	18	3	360	92	30	8	390	100

Fifty individuals (79.3%) had engaged in at least 360 curriculum design projects since leaving the institutes. Taken as an average, 7.2 project related activities were indicated per active conferee.

Efforts of the respondents were almost equally divided between the three design items specified in the questionnaire: 1. identification and specification of appropriate objectives for vo-tech education, 2. identification and specification of more appropriate content for fulfillment of vo-tech educational roles and 3. redesigning content organization to improve instruction and learning.

Future activities anticipated within the twelve month post-response period would seem to premise an increased participation in innovative projects amounting to about 8 percent. Almost half of this increase would be related to curriculum content design.

Curriculum Engineering. Conferees' personal involvements in curriculum engineering projects have been tabulated in Table 4.27.

Forty-seven respondents (74.6%) indicated that they had been engaged in at least 798 curriculum engineering projects since leaving the institutes. The average number of projects per active respondent was approximately 17.

The greatest amount (31%) of project activity related to the fulfillment of unmet occupational and student needs. The activity focuses of these projects included the following: 1. making vo-tech education available to students within a larger geographical area, 2. making vo-tech education available to students whose needs were previously unfulfilled and 3. increasing the number of occupational areas served by vo-tech education.

Table 4.27
Personal Involvements in Curriculum Engineering Projects

	RESPONSE FREQUENCY Projects				MINIMUM NO. OF PROJECTS (1-3 Projects=1; 4+=4)					
	Current		Antic.		Current		Antic.		Total	
PROJECT TYPE	1-3	4+	1-3	4+	N	%	N	%	N	%
Meeting New Needs. . .	79	42	18	6	247	31	42	25	289	30
Guidance & Occup. Orientation.	56	15	13	4	116	15	29	18	145	15
Improvement of Instruction.	135	29	38	8	251	31	70	43	321	33
Evaluation	60	31	7	4	184	23	23	14	207	22
TOTALS	330	117	76	22	798	83	164	17	962	100

Improvement of instruction was accorded equal emphasis in project activity with the preceding focus, unmet needs. The types of projects, which were pursued, included efforts to: 1. improve the teaching and subject skills of staff members, 2. increase interactions between vocational and general education teaching staff, 3. prepare new, or better instructional devices, 4. develop team teaching in, or across, occupational fields and 5. develop interdisciplinary team teaching between vocational and academic disciplines.

Almost one-fourth of the active respondents had been engaged in evaluation activities aimed at the review and validation of existing vo-tech curriculum content, and the review and assessment of program effectiveness in terms of objectives.

Guidance-occupational orientation projects were the major concern for about 15 percent of activities undertaken by the institute participants. Specific focuses for these projects included efforts to improve pupil personnel services (guidance and placement), and to implement pre-vocational or pre-technical programs.

Projections for the subsequent year indicated the possibility of a 17 percent (average) increased involvement in curriculum engineering projects. The greatest effort was expected to be expended in instructional improvement activities.

STAFF AND ASSOCIATES INVOLVEMENTS.

Two areas of inquiry were assessed in this section of the final institute evaluation. The questions were aimed at determining the extent to which staff members, or associates, have been encouraged to take part in innovative projects, and the types of activities in which they have been engaged.

Personnel Involvements. The total number of personnel-project activities identified by the respondents totaled 1373. This averaged out to about 21.8 per institute participant (Table 4.28).

Table 4.28
Personnel Involvements in Innovation

	RESPONSE FREQUENCIES					
	Current		Anticipated		Total	
GROUP	N	%	N	%	N	%
Teachers	513	38	116	43	629	38
Tea./Superv.	122	9	24	9	146	9
Admin./Superv.	226	16	44	16	270	17
Outside Grps	512	37	85	32	597	36
TOTALS	1373	84	269	16	1642	100

Teacher-project involvement ranged from 513 to 635 teacher activity centered units (37% to 46% of the items tabulated). The involvement methods utilized included teacher workshops or seminars, teacher team investigations of instruction, teacher curriculum study groups and problem areas assigned for cooperative teacher and supervisor problem solving. Teacher involvements in curricular projects is expected to increase by about 43 percent of total anticipated change during the next twelve months.

Administrator-supervisor involvements in innovative project activities ranged from 226 to 348 involvement units: 16 to 25 percent of the identified activities involvements. The types of activity methodology included problems assigned to supervisors or administrators, and problems assigned as cooperative teacher-coordinator projects. This type of personnel utilization is expected to increase by at least 16 percent during the ensuing year, in terms of the total anticipated change.

Outside groups involved in curricular activity included educators from locales outside the district, business and industry advisory groups and inter-agency project personnel. These people were involved with 512 activity units (37% of the total). Nearly one-third of anticipated increased utilization of personnel in innovation was expected for this group.

By and large, an increase of more than 16 percent was premised for personnel utilization in innovation for the coming year.

Personnel Activity Types. The kinds of innovation project activities for staff members and associates of the institute participants has been summarized in Table 4.29.

Table 4.29
Innovation Activities of Staff and Associates

	RESPONSE FREQUENCIES					
	Current		Anticipated		Totals	
ACTIVITIES	N	%	N	%	N	%
Occupations Orientation.	229	17	25	9	254	16
Occup. Program Development . . .	422	31	74	27	496	30
Instructional Improvement. . . .	264	19	76	28	340	21
Research	279	20	68	26	347	21
Public Relations	179	13	26	10	205	12
TOTALS	1373	84	269	16	1642	100

The emphases in instructional improvement have been in interdisciplinary program development, team teaching and differentiated staffing, cross-fields program development, and the preparation of instructional packages.

Major efforts in occupational orientation projects have encompassed pre-vocational programs and exploratory work experience programs for careers' orientation.

Public relations efforts were expended in the improvement of school-community information systems; and business, industry and school inter-relations.

Projections for project activity involvements within the next year indicate that efforts will be expended rather uniformly for the areas: occupational program development, instructional improvement and research. Occupations' orientation and public relations will have about one-third less emphasis.

TANGIBLE COMMITMENTS.

Respondents were asked to identify the types of actual commitments made toward innovation since the institutes in terms of finance, staffing, time allocations and facilities development.

Finance. On an average, one-third of the conferees indicated that positive commitments had been made (Table 4.30).

In terms of actual funding, new funding sources and allocation of funds for staff motivation each accounted for more than one-third of new innovation funding support. The new funding sources included new levies, inter-agency cooperation, government and private resources. Staff motivation support was for such things as travel and freeing teacher time.

Table 4.30
Financial Commitment for Innovation

	FINANCE STATUS								
	Response Frequency			Probable		Possible		Total	
ACTIONS	a-Now	b-May	c-Exp.	a+c	%	b	%	N	%
1. New Sources.	16	15	5	21	39	15	49	36	42
2. New Alloc. V.E . . .	7	10	6	13	24	10	32	23	27
3. Staff Motiv.	18	6	2	20	37	6	19	26	31
TOTALS	41	31	13	54	63	31	37	85	100

Anticipated possible funding would appear to rely most heavily upon new sources. Specific regular allocations of vocational funds has been premised by almost one-third of the positive respondents to this question. Future funding, within the next twelve months, could increase by an average of 37 percent.

Staff Commitment. The numbers and types of staff allocation for innovation activities has been tabulated in Table 4.31.

Table 4.31
Commitments of Personnel to Innovation

	RESPONSE FREQUENCY Personnel				MINIMUM NO. OF PERSONNEL (2-4 persons=2; 5+ = 5)					
	Current			Antic.	Current		Antic.		Total	
SOURCE	1	2-4	5+	1	n	%	n	%	n	%
Identify/Upgrade Staff Members. . .	12	3	8	1	58	26	1	17	59	26
Add: Superv., Coord., Adv. or Admin. . .	12	5	3	0	37	17	0	0	37	16
Add: Rehab. or Spec. Needs Specialist .	8	2	1	1	17	8	1	17	18	8
Add: New Teachers for Innovation . .	3	11	4	2	45	20	2	32	47	21
Add: Planning/Development Specialists .	8	2	2	1	22	10	1	17	23	10
Reorgan. Staff to Incr. Innov. Opport.	10	8	3	1	41	19	1	17	42	19
TOTALS	53	31	21	6	220	97	6	3	226	100

Approximately 37 percent of the institute participants indicated a total staff allocation of 220 individuals. This number would indicate an average of 9.6 persons per positive respondent with innovation responsibilities.

The number of added staff members was 121. This group comprised 55 percent of the total innovation personnel reported. The largest component group of added staff was new teachers.

Over one-fourth of the staff members assigned to innovation were personnel identified and upgraded in the system.

Anticipated possible future staffing was expected to increase by about 3 percent during the next year. Of the total anticipated increase, teacher innovation allocations could be expected to increase by almost one-third.

Time Commitments. The time allocations for innovative activities, as identified by 50 positive respondents (79.5%), have been summarized in Table 4.32.

Table 4.32
Commitments of Time for Innovation

	RESPONSE FREQUENCY Man-Hours				MINIMUM NO. OF MAN-HOURS (1-3 man-hrs.=2; 4-6=4; 7+=7)					
	Current			Fut.	Current		Anticip.		Total	
COMMIT. TYPE	1-3	4-6	7+	1-3	n	%	n	%	n	%
Incr. Supv., Admin., or Coord. Time. .	27	3	10	2	136	27	6	75	142	27
Incr. Teacher Time for Innov	23	4	6	0	104	20	0	0	104	20
Incr. Own Time Alloc. for Innov	33	7	10	0	164	32	0	0	164	32
Incr. School Facility Utilization .	16	10	5	1	107	21	2	25	109	21
TOTALS	88	24	31	3	511	98	8	2	519	100

The man-hour allocation has been identified as consisting of at least 511 man-hours per week. This data may be variously interpreted as: 13 individuals per 40-hour week, or 24,400 man-hours per 48-week year. The largest time allocation has been noted for respondents, themselves--32 percent. Allocation of innovative duties to administrative and supervisory staff has been noted in over one-fourth of the responses. Allocations relating to teachers and facilities utilization were each indicated as comprising about one-fifth of the time commitments.

Anticipated future time commitments appear to be very circumscribed (about 2%). If an increase should take place, the major sector of time allocation (75%) would be to increase administrator, supervisor and coordinator time for innovation. The remaining allocation would be for increased school facility utilization.

Facilities Commitments. Table 4.33 summarizes the positive responses of approximately 30 (47.7%) of the institute participants in regard to facilities commitments for innovation.

The number of rooms committed for innovative activities by the positive respondents was indicated to be at least 238. This averages out to almost 8 rooms per respondent.

Modification or building facilities and allocation of space in present facilities for innovation were each identified as the greatest space allocation methodologies (36% each). Space used in cooperation with other agencies, including business and industry, was utilized in more than one-fourth of the room allocations.

Respondents indicated that space allocations within the next year may increase by almost one-fifth. By and large, any space increases would tend to parallel the existing practices noted previously.

Table 4.33
Changes in Facilities for Innovation

	RESPONSE FREQUENCY						MINIMUM NO. OF ROOMS (1-3 rooms=2; 4-6=4; 7+=7)					
	Current			Anticip.			Current		Anticip.		Total	
	Rooms			Rooms								
ACTION	1-3	4-6	7+	1-3	4-6	7+	n	%	n	%	n	%
Modif. or Building for Innov. . . .	15	5	5	4	1	2	85	36	26	40	111	36
Space Alloc. in Present Facil. .	23	3	4	4	0	2	86	36	22	34	108	36
Space Obtained in Coop w/Agencies.	13	5	3	5	0	1	67	28	17	26	84	28
TOTALS	51	13	12	13	1	5	238	79	65	21	303	100

SUMMARY AND CONCLUSIONS.

The following material summarizes the most important conclusions drawn from the post-institute evaluation data.

1. Information obtained during the institutes was consciously diffused to educational staffs and associates by almost all of the conferees. Informal communication modes were used most extensively in this communication process.

2. A substantial majority of the conferees have been personally involved in innovative curriculum activities since the institutes. An almost equal number of conferees have undertaken curriculum design and curriculum engineering projects.

3. Staffs and associates of the conferees were encouraged to become involved in a vast number of innovative project activities. Personnel utilized in this manner were predominantly teachers and outside groups. The major aim of this involvement was occupational program development.

4. Financial commitments for innovation were made by a number of the conferees. The major actions for such commitment were: to obtain funds through new sources and to utilize funds for motivating staff innovation.

5. More than half of the staff members allocated to innovation consisted of added staff. In terms of staff types assigned to innovation, the major source was upgraded individuals within the system.

6. A majority of the conferees increased time allocations for innovative activity for themselves and staff.

7. A number of the conferees were responsible for allocation of facilities for innovation. While a majority of this allocation was the resultant of new building and space allocations in existing plants, an impressive use was made of cooperative other agency space utilization.

8. Variations in tangible commitments, especially in terms of finance and facilities, may be largely the result of the types of positions held by conferees. A number of these positions do not provide opportunities for personnel to directly influence financial and building, or in some cases personnel and time, decision making.

9. In terms of anticipated further commitment to innovation during the twelve months following this evaluation, the following premises seem warranted: 1. very little additional, or further effort will be expended in direct relation to institute information diffusion, 2. a moderate increase in personal commitment to innovative curriculum project work has been anticipated, 3. involvements of staff and associates in new projects is expected to increase, moderately, 4. the largest amount of tangible commitment increases will relate to funding and facilities and 5. no major increase in tangible personnel and time allocations have been premised.

General Conclusions About Institute Accomplishments

The four stated objectives for the institutes were, as follows: 1. development of an understanding of the implicit nature of curriculum, 2. recognition of the roles and models of an evolving vocational education, 3. identification of the nature, purposes and characteristics of vocational curriculum innovation and 4. development of prognoses and guidelines to promote innovation. An implied, objective was that people would go out and engage in innovative activity after leaving the institute. The extent to which the objectives have been fulfilled has been summarized below.

The Nature of Curriculum. The conferees did not differentiate between total curriculums and curricular components with any regular degree of uniformity. They did perceive the nature of specific operational segments of curriculum. Their perceptions on the operational level appeared more fully developed than were theoretical curriculum concepts.

Recognition of Roles and Models. The conferees succeeded in identifying appropriate levels, student types and facilities related to the institute program. They considered the applicability of the programs to vocational education, as a whole. Then, based upon their observations and perceptions of need, future directions for innovation were premised.

By and large, perceptions of vocational education roles was reasonably well accomplished. The degree to which they succeeded is evidenced, to a large degree, in Chapter III, Recommendations and Guidelines.

Innovation Identification. Conferees succeeded in identifying numerous types of innovation in the programs of the institute. They, subsequently, prescribed major directions for vocational curriculum innovation and identified areas of exploration needed for vocational role fulfillment. Evidence of the conferees accomplishments in terms of this objective have also been included in Chapter III, Recommendations and Guidelines.

Prognoses and Guidelines. Evidence of the successful achievement of the fourth institute objective has been provided in Chapter III of this report. Further proof has been recorded in the End-of-Institute evaluation report in terms of prognoses for the programs and problems related to their implementation practicalities.

Post-Institute Performance. The extent to which conferees have been involved in curricular innovation since the institutes has been assessed through the Post-Institute evaluation device. The extent of involvements ranges from 30 percent (tangible financial commitment) to almost 97 percent (communication of institute information). The total involvements of conferees have been quite impressive.

A comparison of what conferees said they would do following the institute to what was actually done has been provided in Table 4.34. The predictions were remarkably close to reality: an average increase of 2.2% over anticipated involvements was noted.

Table 4.34
Comparisons: Anticipated and Actual Involvements

SECTOR	% ANTIC.	% ACTUAL	DIFF.
I. Communication	100	98	-2
A. Indirect	77	78	+1
B. Direct	18	22	+4
II. Personal Involvements in Projects . .	89	79	-10
A. Curriculum Design Activities . .	59	69	+10
B. Curriculum Engineering Activ . .	41	31	-10
III. Staff & Associate Involvements . . .	95	95	0
A. Occupational Orientation.	9	17	+8
B. Occupational Program Develop. . .	51	31	-20
C. Instructional Improvement	15	19	+4
D. Research	18	20	+2
E. Public Relations	7	13	+5
F. In-Service Programs	15	14	-1
G. Assigned Responsibility (Adm./Sup.)	11	25	+14
H. Special Group Configurations . .	18	37	+9
I. Teaching Staff Activities	40	38	-2
IV. Tangible Commitments:			
A. Financial	48	33	-15
B. Personnel	28	37	+9
C. Time	41	80	+39
D. Facilities	49	48	-1
Net Difference			+44
Average Difference			+2.2

APPENDIX A

Participant Recruitment

THE PENNSYLVANIA STATE UNIVERSITY
247 Chambers Building
University Park, Pennsylvania 16802

College of Education
Department of Vocational Education

Dear Vocational Educator:

The Pennsylvania State University will hold two one-week National Institutes on Innovative Curriculums in Vocational-Technical Education in July. These institutes will be concerned with: 1. analysis of the innovation characteristics of selected programs, 2. assessment of potential applicability of the programs to regular vocational education systems, 3. identification of needs for further innovation, and 4. recognition of factors conducive to innovation and change.

The institutes will seek participants on regional bases. The eastern region institute will involve individuals for the area generally East of the Mississippi River, and will convene at The Penn State Campus July 8-12. The western institute will take place at the University of California, Santa Cruz Campus July 22-26.

We would appreciate your assistance in identifying possible participants from your state for one of the institutes. Please fill in names of persons you can recommend on the enclosed form and return by April 25, if possible. General criteria for selection of participants are noted on the form.

Please refer the extra form to vocational field leaders, besides T & I, for referrals. We would like to obtain cross-fields participation in the institutes.

Sincerely yours,

Hilding E. Nelson, Director
Vocational Curriculum Services

HN/jg

Enclosures

RECOMMENDED PARTICIPANTS FOR A SUMMER INSTITUTE TO STUDY INNOVATIVE CURRICULUMS

Submitted by:

Name ____

Street Address ______________________________________

City ____________________ State ____________ Zip ____________

General Criteria

Participants should be individuals in positions to promote and encourage curriculum innovation change and decision-making. Specifically, they must be employed in one of the following types of positions:

1. State supervisory or administrative positions,
2. Local vocational/technical school directors or principals,
3. Teacher Educators who teach vocational curriculum courses,
4. Secondary school principals having, or planning to institute, vocational programs.

Participants from all vocational fields and teaching levels are desired.

Recommended Participants

1. Name ________________________________ Phone ____________

   Title ____

   Street Address ______________________________________

   City ____________________ State ____________ Zip ____________

2. Name ________________________________ Phone ____________

   Title ____

   Street Address ______________________________________

   City ____________________ State ____________ Zip ____________

3. Name ________________________________ Phone ____________

   Title ____

   Street Address ______________________________________

   City ____________________ State ____________ Zip ____________

Mail to: F. Wally Lester
410 Keller Building
University Park, Pennsylvania 16802

THE PENNSYLVANIA STATE UNIVERSITY
Continuing Education
University Park, Pennsylvania 16802

Conference Center
J. Orvis Keller Building

Area Code 814
865-7557

Dear

We appreciate your interest in the National Institutes on Innovative Curriculums in Vocational Technical Education. Limitations in the number of persons who may be accepted for the institutes, requires us to review all applicants carefully in terms of prescribed eligibility requirements.

Review of your application would seem to indicate that you are not presently employed as a state or local administrator or supervisor with curriculum development and/or decision-making responsibility; nor as a teacher educator engaged in curriculum coursework activities. Consequently, we cannot accept you as a participant in this institute.

If you feel that our appraisal is inaccurate, we will be happy to reappraise your application in terms of substantive information which you can provide.

Sincerely yours,

Hilding E. Nelson
Project Director
405 EPC II

Application and
Reply Card

**NAT'L INSTITUTES: Innovative Curriculum
Vocational Education, Project 8-0372**

Name ____________________

Title ____________________

Street ____________________ Phone ________

City ____________ State ________ Zip ________

Nature of your vocational curriculum responsibilities and interests:

(Complete this Section)

I would like to attend this institute..... ____
I will not be able to attend .... ____
I will be accompanied by: wife .... ____
children (number) .... ____
number of children under age 6 .... ____

TASK FORCE PREFERENCE (Rank 1-5)

1 Innovative Identification and Prognoses .... ____
2 Planning Strategies: Innovative Curriculum .... ____
3 Climates Affecting Innovation and Change .... ____
4 Implimenting and Expanding Innovations .... ____
5 Cost-Benefits Evaluative Criteria .... ____

THE PENNSYLVANIA STATE UNIVERSITY

Continuing Education Conference Center

University Park, Pennsylvania

Date:

From: F. Wally Lester, Conference Coordinator

To:

This is to inform you that your application to participate in the National Institutes on Innovative Curriculums in Vocational-Technical Education to be conducted at The Pennsylvania State University, July 8-12, 1968 has been accepted. We are pleased to have you as a guest of the University for this program and are looking forward to a rewarding effort on the part of all concerned.

Meeting Location and Travel

All the meetings will be conducted in the Conference Center (J. Orvis Keller Building) on the Penn State Campus which is located in the Borough of State College, Pennsylvania. Enclosed are: a campus map, a travel brochure, and a reply card which can be sent to a local travel agency if you would like them to help with your travel arrangements. The agency is familiar with local travel difficulties and can be helpful in coordinating connections for both arrival and departure.

Registration

Final registration will be conducted in the Conference Center on Monday morning, July 8, 1968 from 8:00 to 9:00 a.m. You will receive your Institute allowance check at that time.

Basic Institute Time Schedule

Monday-Thursday:
8:00 a.m. - 5:30 p.m. - regular sessions
7:00 p.m. - informal discussion with consultants

Friday:
8:00 a.m. - 12 noon - regular sessions
1:30 p.m. - 3:30 p.m. - informal discussion and social sessions

Accommodations (housing and meals)

You know from previous correspondence that University food and lodging facilities are available. Lodging is in our residence halls (specifically, West Halls, which is marked on your campus map). Families are welcome to stay in the residence halls, and there is no charge for infants if you supply the bedding. There is a residence hall reservation form (card) enclosed, as well as a return envelope for your convenience. Meals are not available on a contract basis, but excellent cafeteria fare is available at our Student Union Building (HUB) at very reasonable prices, and the downtown restaurants are not far to walk. Also enclosed is a listing of hotels and motels in the area if you want those kind of accommodations. (In which case you must make your own reservations). Residence hall fees are to be paid only when checking in at the residence hall desk.

Please Note:

1. This Institute does not carry college credit.
2. Participants will be expected to take part in an evaluation activity approximately six months following the Institute.
3. Please notify the conference coordinator, immediately, if you find that you will be unable to attend the Institute.

THE PENNSYLVANIA STATE UNIVERSITY
Continuing Education Conference Center
University Park, Pennsylvania

Date: June 7, 1968
From: F. Wally Lester, Conference Coordinator
To: Accepted Applicants

This is to inform you that your application to participate in the National Institutes on Innovative Curriculums in Vocational-Technical Education to be conducted at The University of California at Santa Cruz, July 22-26, 1968 has been accepted. We are pleased to have you as a guest of the University for this program and are looking forward to a rewarding effort on the part of all concerned.

Travel

The participants will arrange their own travel. Persons coming by common carrier are encouraged to terminate at San Jose and use University arranged transportation to and from Santa Cruz. (Connections from San Francisco are poor.) Schedules for the University supplied transportation will be provided in the near future. A nominal fee will be changed for this service.

Registration

Final registration will be conducted on Monday morning, July 22, 1968 from 8:00 to 9:00 a.m. You will receive your Institute allowance check at that time.

Basic Institute Time Schedule

Monday-Thursday:	8:00 a.m. - 5:30 p.m.	- Regular sessions.
	7:00 p.m.	- Informal discussions with consultants.
Friday:	8:00 a.m. - 12 noon	- Regular sessions.
	1:30 p.m. - 3:30 p.m.	- Informal discussion & social sessions.

Accommodations (housing and meals)

You know from previous correspondence that University food and lodging facilities are available. Food and lodging in the University's residence halls includes three meals per day in the cafeteria with student fare at $9 per day in a twin and $10 per day for a single. Families are welcome to stay in the residence halls if there are no children under 6 years of age.

Please Note:

1. This Institute does not carry college credit.
2. Participants will be expected to take part in an evaluation activity approximately six months following the Institute.
3. Please notify the conference coordinator, immediately, if you find that you will be unable to attend the Institute.

APPENDIX B

List of Participants

PARTICIPANTS AT THE NATIONAL INSTITUTES: INNOVATIVE CURRICULUMS IN VOCATIONAL-TECHNICAL EDUCATION

Eastern Region, Penn. State University, July 8-12, 1968

Ahern, Paul F., Director
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(L) Leader (RC) Recorder (RP) Reporter

APPENDIX C

Conference Program

PROGRAM

MONDAY, JULY 8 & 22, 1968

8:00 - 9:00 a.m.	Registration
9:00 - 9:15	Orientation to the Institute Dr. Hilding E. Nelson, Institute Director Director, Vocational Curriculum Services The Pennsylvania State University
9:15 - 10:15	Task Force Organization: -Meet your co-workers -Planning strategies
10:15 - 10:30	Break
10:30 - 12 noon	Keynote: DIMENSIONS OF CURRICULUM Dr. Robert B. Patrick, Professor College of Education The Pennsylvania State University
1:30 - 2:30 p.m.	VOCATIONAL EDUCATION ROLES: HIGH SCHOOL Mr. T. N. Stephens, State Supervisor Introduction to Occupations North Carolina, Department of Public Instruction
2:30 - 3:30	VOCATIONAL EDUCATION ROLES: POST HIGH SCHOOL Mr. Robert M. Knoebel, Assistant Director Bureau of Community Colleges Pennsylvania State Department of Public Instruction
3:30 - 3:45	Break
3:45 - 5:00	VOCATIONAL EDUCATION MODELS Dr. George F. Outland, Director Know and Care Center San Mateo Union High School District
7:00 - 9:00	Informal Evening Session -Interaction with consultants -Interaction with other participants -Film reviews: Sign On -- Sign Off Computers, Printouts and Career Possibilities Where the Action is

TUESDAY, JULY 9 & 23

8:00 - 10:00 a.m.	Program Presentation and Discussion: RECAPTURING DROP-OUTS BY RESTRUCTURING LEARNING SITUATIONS Mr. Charles F. Nichols, Principal-Dir. Work Opportunity Center Minneapolis Public Schools
10:00 - 10:10	Break
10:10 - 12:10 p.m.	Program Presentation and Discussion: TRAINING THE UNEMPLOYED FOR DRAFTING DESIGN OCCUPATIONS Mr. George W. Elison Dean of Technologies Lehigh County Community College (Pa.)
1:20 - 3:20	Program Presentation and Discussion: MAKING USEFUL PRODUCTIVE CITIZENS OF SLOW LEARNERS Mr. Erwin J. Klein, Principal Market High School Warren, Ohio
3:20 - 3:30	Break
3:30 - 5:30	Program Presentation and Discussion: PREVENTING DROP-OUTS THROUGH PRE-TECHNICAL PROGRAMS Dr. Harry V. Kincaid Stanford Research Institute Menlo Park, California
7:00 - 9:00	Informal Evening Session -Interaction with program consultants -Sharing experiences--participants -Film review: The Retreads Consultant special materials

WEDNESDAY, JULY 10 & 24

8:00 - 10:00 a.m.	Program Presentation and Discussion: TRAINING PROGRAM FOR A NEW TECHNOLOGY Dr. Edmund P. Garvey, President Springfield Technical Community College Springfield, Massachusetts
10:00 - 10:10	Break
10:10 - 12:10 p.m.	Program Presentation and Discussion: PEOPLE-CENTERED COMPREHENSIVE VOCATIONAL EDUCATION Dr. Maurice J. Daly, Assistant Superintendent Quincy Vocational-Technical School Quincy, Massachusetts
1:20 - 3:20	Program Presentation and Discussion: CURRICULUM INNOVATION FOR CHANGE WITHIN THE SCHOOL SETTING Mrs. Hilda Watson Gifford, Director Project FEAST Center for Technical Education San Francisco State College
3:20 - 3:30	Break
3:30 - 5:30	Program Presentation and Discussion: ON-CAMPUS WORK EXPERIENCES FOR THE MENTALLY RETARDED Mr. G. Roy Nicolaysen Work-Study Coordinator Oakland Unified School District
7:00 - 9:00	Informal Evening Session: -Interaction with program consultants -Sharing experiences--participants -Film review: Consultant special materials

THURSDAY, JULY 11 & 25

8:00 - 12 noon	Task Force Group Meetings -Consolidate program analyses -Consider implications for Vocational Education innovations and innovators -Prepare recommendations and guidelines for innovation and innovators
1:30 - 2:25 p.m.	Task Force #1: Report and Discussion
2:25 - 3:20	Task Force #2: Report and Discussion
3:20 - 3:30	Break
3:30 - 4:25	Task Force #3: Report and Discussion
4:25 - 5:20	Task Force #4: Report and Discussion
7:00 - 9:00	Informal Evening Session (This session will be held upon request of participants)

FRIDAY, JULY 12 & 26

8:00 - 8:55 a.m.	Task Force #5: Report and Discussion
8:55 - 9:30	General group discussion on programs, reports and further directions for innovation in vocational education
9:30 - 10:30	Summary and Conclusions Institute Director
10:30 - 10:45	Break
10:45 - 12 noon	Institute Evaluation
1:30 - 3:30 p.m.	Informal group discussions and social session for participants who will not leave immediately

APPENDIX D

Task Force Charges

Task Force

CHARGES!

The organization of this institute may be somewhat different from what you might expect in that the participants will be the leaders and experts who will carry the major responsibility for successful achievement of the institute goals.

While it is true that we have established the basic structures and recruited consultants, this procedure has one major justification--to activate the perceptions and provide initial viewpoints for task force focus.

In substance, the task forces have three operational strategies: inquiry, clarification and projection into the future. They will seek to answer such questions as: What innovation? How does it operate? Why innovate? Does the innovation have general application in general vo-tech education? What benefits accrue? Where should this innovation go from here?

Each task force will focus its operations around one area affecting curricular innovation. The final product of this focus will be the specification of guidelines or recommendations for innovation and innovators of the future.

The formal presentations will provide a basic field for initial inquiry and definition. Informal interaction with participants and consultants will provide opportunity for idea clarification and explorations of possible continuance, expansion or modification of initial concepts--or perhaps suggest new directions for innovation. These bases, plus the expertise of the task force members, provide the foundations for guideline development.

Bases for Guideline or Recommendation Development

In general, task force operations will involve:

1. Identification of the basic characteristics evidenced in the presentations--in terms of each task force's inquiry emphasis.

2. Valuation of the characteristics in terms of their potential for implementation into general use in vocational or technical education.

3. Expansion of basic characteristics concepts through interaction with participants and consultants in informal dialogue.

4. Development of recommendations and/or guidelines for the continuance, expansion or modification of innovative practices for the future; and possible new directions.

Task Force Responsibilities

1. Introduction of program presentations by task force leaders.
2. Moderation and encouragement of post-presentation inquiry sessions by task force leaders.
3. Development of recommendations and/or guidelines for innovation and innovators--led by task force leaders, consolidated by task force recorders, and reported by task force reporters.
4. Presentation of task force reports to the total group and conducting group dialogue on the reports by the task force reporter.
5. Development of a final summary of task force report after group interaction sessions for use in institute reporting by the task force reporters and recorders.

Task Force Areas of Focus

Task Force #1 -- Innovation Identification and Prognoses.

Basic Inquiries:

1. Identification of innovations. Some types of innovation which may be evidenced include: New content, new organization of content, new types and utilization of learning materials, new types and uses of physical facilities for learning, new utilization of educative personnel, new need fulfillment, new methods of student handling in learning situations, etc.
2. Valuation and recommendations relating to the innovations above; such as:
    a. The best applications for vo-tech education at various fields, levels, etc.
    b. The practicality of continuing present innovative practices as they are presently constituted.

__Task Force #2__ -- Planning Strategies for Curriculum Innovation.

Basic Inquiries:

1. What bases are used for identifying a need for innovation?
2. Who are the effective leaders in innovation planning?
3. What persons need to be involved in the planning of innovative programs?
4. How is an organization for innovation established?
5. What are some organizational principles for on-going innovative curriculum activity?

__Task Force #3__ -- Climates for Innovation and Change.

Basic Inquiries:

1. Who are the agents of change for successful implementation of innovative practices?
2. How are they involved in programs as positive forces for change?
3. What (or who) are the major units of resistance to change?
4. What procedures are used to neutralize or overcome resistance?
5. What is the nature of climates conducive to innovation and change?

__Task Force #4__ -- Implementing and Expanding Innovation.

Basic Inquiries:

1. What types of innovative practices or programs should become a regular part of vo-tech education?
2. What changes or modification in innovation practices should be made before incorporating them as a regular part of vo-tech education?
3. What kinds of further innovation should be investigated for possible applicability to vo-tech education, either as an extension of existing programs, or entirely new directions?

Task Force #5 -- Cost-Benefits Evaluation Criteria.

Basic Inquiries:

1. What are the benefits derived through the exhibited programs--new needs fulfilled, more efficient personnel utilization, more efficient learning, etc.?
2. What other benefits are derived through vo-tech education?
3. How may these benefits be validated for more realistic program evaluation?
4. What are the relative pupil costs for various types of programs?
5. What types of programs seem to be most feasible in terms of cost-benefits. Why?

TASK FORCE OPERATIONAL RESPONSIBILITY SUMMARY

Task Force Program Introductions.

Tuesday:	Program 1	(C. Nichols)	-- T.F. #1
	Program 2	(G. Elison)	-- T.F. #2
	Program 3	(E. Klein)	-- T.F. #3
	Program 4	(H. Kincaid)	-- T.F. #4
Wednesday:	Program 5	(E. Garvey)	-- T.F. #5
	Program 6	(M. Daly)	-- T.F. #1
	Program 7	(H. Gifford)	-- T.F. #2
	Program 8	(G. Nicolaysen)	-- T.F. #3

Task Force Reports. (30 minutes plus 15 minute group discussion)

Thursday:	a.m.	All groups work separately preparing reports.
	p.m.	T.F. #1, 1:30 - 2:25 T.F. #2, 2:25 - 3:20 T.F. #3, 3:30 - 4:25 T.F. #4, 4:25 - 5:20
Wednesday:	a.m.	T.F. #5, 8:00 - 8:55
Friday:	a.m.	9:30 - 10:45, Completion of summaries of task force recommendations for institute reporting by group recorders and reporters.

APPENDIX E

Presentation Texts

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Making Useful Productive Citizens of Slow Learners, Mr. Erwin J. Klein 180

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A Training Program for a New Technology, Dr. Edmund P. Garvey, Mr. John Bugbee 213

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Curriculum Innovation for Change Within the School Setting, Mrs. Hilda Watson Gifford 251

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DIMENSIONS OF CURRICULUM ACTIONS

Dr. Robert B. Patrick, Professor
College of Education
The Pennsylvania State University

If you find me slipping into illustrations in social studies and English, if you find me talking to you as if you were teachers, it will be natural because those were my fields. My experience has involved mostly talking to teachers rather than supervisors -- but you, my friends, had better be teachers if you are ever to get anywhere with supervision. So, simply translate the word, teacher, to supervisor if I begin using the word, teacher too much.

I would like to cover six points.

Curriculum

If you are planning to develop or revise a curriculum so that it matters to the students and community you serve, you should get several things straight in your mind and agreed upon as a faculty or a group.

Foremost, you must agree upon what is a curriculum. A curriculum is all the activities of a school which aid in achieving the organized objectives of the school. This is what I am talking about when I say curriculum.

Secondly, you must consider what takes place when you learn. You change when you learn! You change your mind. You change your information. You change your skills. You change your attitudes. Memorizing is not learning. It could be, but it is not necessarily so. Let me give you an example that learning means change.

Here is a sixteen year old boy who has had driver education. He gets 100 on his rules-of-the-road and drives perfectly on his driving test -- so he gets his driver's license. That evening, he is driving; he comes up to a stop light. He looks around, doesn't see anybody, so he zooms through. He got away with that, so he zooms through the next one. About the tenth light, hopefully, a whistle blows and the state police come up. He is fined fifteen dollars and costs. He says to his friends when he recounts this episode: "Boy! I learned." He did learn, because he changed. He knows this all the time, but he didn't learn -- he didn't learn until he changed.

I think you need to know what this concept does to the courses of study not only that you represent, but that of social studies, English and the rest. If you believe that learning takes place when you change, then think of the chaff that is in all our courses of study.

Finally, you must get straight the question: "Upon what bases does the curriculum rest?" If you are going to build a curriculum -- not a course of study -- it must rest upon at least three bases.

One base is the needs and abilities of learners. We build a curriculum upon what the kids need, and what they are able to handle. We are not to forget abilities while we think about needs. This idea has come mostly through progressive education.

The second base is the needs of society: local, state, national and world. This idea came quite early with the rise of nationalism and the time when common people began to go to school. Expression of this maturation is noted from the Kalamazoo decision which enabled us to finance secondary schools. If you recall how Mussolini, Hitler and other dictators have utilized schools, you have further evidence of schools designed to fill the needs of society.

Thirdly, curriculum is based upon a structure of the discipline. This basis actually came first. In medieval times, when schooling began again, man organized disciplines: whether it was logic, meta-physics, one of the quadrivium or the trivium. They organized this into a hierarchy -- into a structure.

The other two ideas (student needs and abilities, and needs of society) came into dominant curriculum importance in the 19th and 20th centuries.

Finally, following the second world war and later emphasis on Sputnik, we returned to emphasis upon the structure of the discipline. We said: "You have to have subject matter. You must have structure -- that's the important thing." This concept was particularily emphasized by Bruner.

The structure of the discipline has two parts. When talking about structure, you are thinking about the outline, the story, or the framework of that discipline. Whether that discipline is physics or whether it is auto shop, it must have a framework or outline to it. Without the framework it is not physics. It may be something about physical science, but it is not physics. But remember this: the framework is but one of the two parts of the structure of the discipline.

The other part that you must teach your kids (and you must learn first yourself) is how did the people who developed the structure go about doing it? What is the technique by which you decided upon the structure of physics, or the structure of any other discipline? This process must be taught to kids because of the tremendous amount there is to know. You cannot teach history any more; you cannot teach physics any more. There is too much accumulated knowledge to them. You have to teach a structure of physics; a structure of history. Content must have an outline and be selected because it fills certain needs.

If you do not teach discipline development to your students, you do not give them a chance to learn outside of school. How can students judge what to believe when they read about history? They will have judgment capabilities if they have learned methods of historical research. Wouldn't this be a good idea in shop? Have you taught students the process of problem solving? How do you go about deciding what is the scientific method of deciding these things?

So, if you are going to develop or revise a curriculum, you need to know: what is a curriculum, how pupils learn and the bases upon which curriculum is structured.

Curriculum Revision

What do we need if we are going to revise a curriculum? Practically all of us will be called upon to revise a curriculum. Very few will have the thrill of developing a new curriculum in a new place.

Help Needed. First, we need help. We need help from others in our field. For example in vocational education, you need Frieze and Williams; you need the magazine, SCHOOL SHOP; you need the Penn State-Rutgers study -- these are people in your field who have worked on revising your curriculum.

You also need help from experts in curriculum. Are you familiar with these: 1. VOCATIONAL EDUCATION by the National Society for the Study of Education, 64th Yearbook, 1965 (This is one of the most scholarly books defining the bases for vocational education, today. It was written by scholars in your field and the field of curriculum.), 2. ASCD, 3. N.E.A., and 4. the magazines and bulletins in your field.

Next, you need help from the school leaders. Teachers should welcome, and in fact demand, help from supervisors in classrooms, in committee work, and with materials.

Fourth, teachers and supervisors need help from each other. That's what you are doing in this institute -- trying to get help from each other. Stop this hoarding in your own school system! Stop the hoarding of materials, equipment, supplies and techniques. Develop a professional library for teachers. The best library I ever saw was in Mexico City at the American School. They had a large room divided into several parts with all types, quantities and qualities of materials for teachers. It contained tremendous amounts of filmstrips, movies and materials which students and teachers had made in the past that could be used for help in the present and future. So let's get a professional library and librarian and let's help each other. That is only one way. I also know places, and so do you, where you can't borrow the projector from the English department -- or the other way around. Someone wants to borrow ours, but we won't give it to them because it's ours. We bought it with our funds.

Finally, you need help from the community. With all the accompanying problems that community help brings, you need the help of parents, pupils, business, industry and labor. You must ask their help for you are going to need their help with work-study programs and all the other things which you may propose. If you are going to get help from them, you must have cooperation with them. To get cooperation you must ask them for suggestions. (I admit you must control the situation, but you should be able to do this.)

Time Needed. First you needed help; second you need time. You need time so that you can do curriculum work at times other than after a full day of teaching. I think that it is a lot of nerve to expect teachers to put creative thought into anything after spending a full day working. So, you had better find some other way to do it.

You need time for leaders to help teachers. We must develop a changed attitude toward classroom supervision -- a changed attitude by teachers toward supervision and by administrators toward supervision. The supervisor shouldn't come in with an actual, or potential, rating sheet for merit rating or whatever else. You ought to agree among yourselves, supervisor and teacher, about what the supervisor is there for. The supervisor should be there to help and act as passers-on of information -- as coordinators. (This, I think, is a very good reason why you should call yourselves coordinators rather than supervisors.) We ought to together plan to do better those desirable things that we are going to do anyhow -- as Briggs said a thousand years ago.

We ought to use less time on non-teaching duties that less well-prepared, less well-paid people could do better than teachers do it. You know what that means in your school. We haven't even scratched the surface with para-professionals, with volunteers, with temporary help.

A good example of this, on a lower level, is the following: my wife spends every Thursday afternoon as a short-order cook over at the snack bar at the hospital. "This is part of her civic duty," she says. She is a trained librarian; yet, nobody ever asks her to help in the local high school library. Why don't we ask people who can do things to have the same kind of civic duty to our schools? Now, these may not be the same things, but it is the same idea that I am talking about.

Schedule Needed. If you are going to revise a curriculum you need a schedule: a work plan which you can and will sustain throughout the year. The schedule would involve work partly on the teacher's time and partly on time made available by the school district. The work schedule should be frequent enough so that you do not spend all your time catching up or reviewing. Let me give you some practical examples.

I know a school system where they extended the school day. The superintendent said, "Now look. We have seven periods a day here. They are forty-five minutes. We will cut them to forty-two minutes, add a period and extend the school day to cover the rest." Part of the time then came from cutting each period, and part came from extending the day. Then he said, "Now look. This extra period is not for the teachers to teach another class, nor more cafeteria duty. Now, principals, plan your school schedule so that no English teacher has a class the first period -- that's the curriculum period for English. No math teacher will have a class second period, and so on, throughout the school." So, five periods a week the subject matter people could meet in curriculum committee meeting. This did not mean that teachers have to spend all that time on one type of activity, but they had that time available.

How did it work? It depends on the leadership. I know of places where it didn't help at all. They didn't do anything with it. But where there was good leadership, much work was accomplished. This is one possibility.

Monday afternoons from two to four (one-half day school is another possibility). Two to four means half the time is school time and the other half, teacher time. If this is scheduled every Monday afternoon, and you know this is what you are going to do, and you know you are getting paid for this -- this is another possibility.

You know the Florida procedure. Two weeks before school opens in the Fall and two weeks after school closes in the Spring for students, the teachers are there. Any of you who know about Florida schools know that, again, this is a mixed blessing. I know areas in Florida where this is not just useless, but worse than useless, because it deteriorates the attitude and morale of the teachers. Yet, I know areas in Florida where this has been a tremendous help.

Dade County has done a tremendous amount of curriculum work using this method. Right after school closes you say, "Well look! If we had it to do all over again how would we do it differently?" The last year's problems are right in front of them -- they've just finished. In the Fall when they come back you ask, "Well, how are we going to do it better this year?" So, they plan -- and the system works.

Another way that should be increasingly thought about is that curriculum committees ought to be paid to work in the summer -- when they are ready, and when they can produce something. For example, here is a curriculum committee in English or any other discipline which has made some progress during the year. Now, could we clean this up during a summer if we use these people who had been working on it? All of them? Maybe. At least representatives of the teachers, themselves. Not some outside person. (Certainly, you may get an expert from outside to help them while this is going on.)

The last way that I will mention is the idea of eleven-month schools. We have now in Pennsylvania a number of school systems hiring teachers for eleven months. This is not an eleven month program -- it is nine plus two. Some of those teachers will teach in the summer schools. Some will work with curriculum. Some will be working with equipment, audio-visual aids, and so forth. They will all be paid for eleven months and expected to give eleven months of work.

We talked about a schedule. There are many possibilities. See which one fits you.

Directions Needed. You have to know where you are going if you revise a curriculum. This means, a philosophy of education, and a set of objectives for education itemized as to understandings, skills and attitudes. If not detailed in the beginning, at least defined enough to provide direction.

An example of this direction at Penn State is the Pennsylvania School Study Council. One of the men working with this council, Dr. Hugh Davison, has been working this past year on this idea of knowing where you are going. He started with The Ten Goals for Pennsylvania Education, as developed by the Pennsylvania Department of Public Instruction (which are basically a rewording of the Ten Imperative Needs). He then showed that a particular goal for a middle school could be achieved in certain subject areas, and at the high school by certain areas. The next step was to identify the units to be used in achieving the goal. He will continue this reduction process until all goals are defined in operational levels.

So, you need to know where you are going. Every unit, every lesson plan should show that we are furthering some understanding, some skill or some objective in the most efficient way that we can.

Evaluation Needed. If you are going to revise a curriculum you need continual evaluation. Evaluation of what has been done. Teachers must keep a continuous inventory of their successes and their failures. After each lesson and after each unit taught, the teacher should note on his own lesson plans what was effective, what furthered the attitudes, skills and understandings -- which were the reason for teaching the unit in the first place -- and what was useless, or what even got in the way of achieving the objectives. So you add and eliminate while the evidence is clear in your mind. This is the perpetual inventory concept. (How would you run a business if you didn't do this?) If we are going to be professional about this business of education, we too must have an inventory of our ideas: what has been good; what has been successful; what has not been successful.

Beliefs Needed. If we are going to revise a curriculum, we need to believe. We need to believe that it is not enough to teach kids what is in a lab manual or in a book. That is not what written materials are for: for kids to memorize.

We have to believe that people are different. They are different in their capacities, different in their motivation, and different in the quality and the quantity of their understandings, skills and attitudes.

You have to believe that change is the only sure fact of life and the curriculum, and that you have to keep up with these changes.

You have to believe that there is so much to know in English, or science or vocational education that it is impossible to teach it all. That it is absolutely imperative to do two things: 1. to determine and teach the basic structure of the discipline, and 2. to train your students in the methods of learning and evaluating new knowledge and techniques as they become available in each discipline.

Coming back to Bruner again, we note that the basic principles involved are more important than the skills perfected in high school. I believe this -- that in high school the process is more important than the product. You have a tremendous duty to teach this process, and how this process was arrived at. (It was arrived at by historical research in history; by problem-solving and by a scientific approach in science, or in vocational education; by inductive-deductive approach in math -- new math is more a way of ordering math knowledge than new theories of mathematics.)

You must have an outline -- a step-by-step development of your discipline -- and you have to teach kids how that was arrived at by the experts so that they can do this when they are not under your thumb. The answer is not re-education -- we'll have enough of that in spite of this -- but to keep their education up to date as time goes on.

I think that you must, above all, believe and seek for other good ways to promote learning in people (your students in school, you in this enterprise) except by the method of talking. Telling is an important way to teach, but we have to find other good ways.

Procedures. How do we proceed? I think that there are two or three typical ways that are usable. I would like to give examples of these.

First, I would like to give some examples in the setting that you will probably have in an on-going school.

Suppose you do this. As the coordinator, ask your auto mechanic's teacher: "Do you think your course is perfect? Do you think the way you teach it is perfect?" (I hope you will get the answer, no.) Then you say, "What could you add to it? Is there a unit that would make it better?" So you say to this man, "Go ahead and try it. Let's outline it. I have some help here for you." And so in this discipline (or whatever it is) you get the teacher to try a new unit and to evaluate it. You help him! Then you ask him, "How did it go?"

He says, "Oh! I think it's fine. The kids learned something here that is part of our objectives. They learned something new that they didn't learn before and it's up to date."

You say, "Good! Now do you think that the course is perfect?"

He answers, "No, I think we should add another unit." So, you go through this approach again.

You don't do this with just one person, but with as many as are ready under your supervision. Pretty soon, after the person has done a couple of these, I hope he will say to you, "But look! I had a full course of study before. Now we stuffed two more units into it."

You say: "What do you need least? What could you take out of it?"

He replies, "Well, I don't want to take any of these out." This is like pulling teeth because the guy has worked hard on these units and he doesn't want to take any of them out.

You ask: "Could you telescope any of these units? Could you put them together? Do some of them relate so well to each other that you could put them together some way so that you could get some more time? Is it necessary for all kids to have all the units in your course? Maybe certain ones could use this unit and others use other units -- as long as it still has a structure." So, pretty soon as he works on this you begin to ask him and his fellows, "Why? Why did you want to add certain units and why were you willing to cut out certain units."

As these people become more lucid about becauses, you can say, "Is this a skill; is it an understanding; is it an attitude; or is it all of these?" They begin to become a little more lucid about understandings, skills and attitudes as objectives. Maybe for the first time, you bring in the word, objectives. It depends.

After you talk about this for awhile, maybe you can say to them: "I think it is time for us to get an underlying set of statements about vocational education in our school. What do we mean by vocational education and what are the reasons for teaching it?" After five years, maybe, or four, or six, you come up with a philosophy of education for vocational education, with a set of objectives. You do it psychologically, rather than logically (which we will get into later). This isn't finished, but let's stop right there and go on to another possibility.

Suppose you went in to talk to a group of teachers in one subject matter area. You say to these people: "You have a course that you teach (American History, World History, American Civics, etc.) For each course that you teach, take a sheet of paper. Write the name of the course and the grade that you teach (11th grade American History) and you write on this one page a list of the units that you teach. Now if you just follow a shop manual or a textbook, write down the chapter of subject headings. What units do you teach? I want to know what you really do." Now, when they get those written down, tell them to turn the sheet over and write on the other side, Why I Teach American History. What understandings, skills and attitudes do I expect to get out of it? Now you see what you may do. Get all the American History teachers together in the school and you see if you can get a structure for American History in this school, and a set of objectives which they will all accept. Hoping with your help that this combined knowledge will be greater than the knowledge of any one of them.

You have been doing this with all the other subject matter specialists in social studies at the same time. When you get this structure and objectives down for each one of the courses, bring the social studies people or their representatives together and say, "Now, can we get a set of objectives for social studies? Here is what we have for each one of the courses. Can we get a structure for the social studies of the school?" After thinking about this, they may find that American History in the eighth grade, and also in the eleventh grade, may be wrong. That maybe there should be some other way to organize it. So they reorganized the structure of their discipline.

When you get this far -- and you are doing this in each one of the areas, not just social studies -- do this, say, "All right now, you have a set of objectives; you have placed the subject matter in every grade; and you have a set of units for each subject matter course. Take a long piece of wrapping paper. On the top put the understandings, skills and attitudes for social studies, math, science and vocational education -- one set for each subject area. Under that draw a line and you have two feet to tell us what you will do in that subject in twelfth grade; two feet for the elventh; and so on down through seventh or sixth grade or wherever you go (it ought to go to the kindergarten)." If you go through six years only, you have twelve feet of paper plus that used for the objectives.

I did this last spring in a school system where the teachers were working every day -- except for some half-days which they got off to help with this project. We went to the auditorium because it was the only place which had ceilings high enough. We put this wrapping paper up across the back of that room. You align the sheets evenly. Now look what you have. You have a chance to stand and look at the whole thing to see what each student will take. This northern Pennsylvania school had thirteen subjects which the seventh graders took sometime during the week.

All grades were then checked for horizontal articulation. Here you are teaching American geography in the seventh grade, American history in the eighth grade and American literature in the ninth grade. Isn't it possible in some way to get articulation across subjects so they can be taught at the same time -- so the kids can see some sense to it?

We found in another school system, five units on the human eye. (These are the things you notice when you have all the information out in front of you.) Health had two units, one in junior high and one in senior high. General science had one unit on the human eye. Physics had a unit, and so did biology. If we would stop this kind of duplication, we would have time to do a lot of new things in school. To you in vocational education, it is more a case for expanding than to cut-out, the five human eyes -- you don't have that. I don't really care whether you duplicate, or not. You may find it well to do so, but you want to do so knowingly rather than be unconscious of the fact. Many of you, I hope, are thinking of places where unnecessary duplication would show up.

Think a little about industrial arts and vocational education here. Think about the fact you are, let's say, going to teach something about printing in industrial arts. We have world history where they teach something about the history of printing. We have art where they teach block printing, and so on. If you look across your subject objective sheets, couldn't you find some way to integrate or articulate these? This business about the history of printing and the work of printing -- I don't know whether it is art or history; whether industrial arts ought to have printing, except for the practice that you get. The same thing is true for the history of tools. Think of the possibility of getting some help in industrial education so that the kids see the relationships between subjects.

Let me say this, this process takes years of work and hundreds of hours of time, but it must be done by those who teach the students, with whatever help they can get from all who have something to give pupils -- from the National Society of Education, down. Let's plan how to do it, not moan about how difficult it will be. Professionals, with a professional salary, can be expected to do no less.
(Which comes first the professionalism or the salary? Let's hope that we can go forward on both fronts. You have to give a little and take a little if you are going to get anywhere here.)

New School Curriculum Action

Only with the most sophisticated faculties and the most cooperative communities can you do the logical, orderly developmental type of curriculum revision and expect it to become the working papers for the school.

If you have a new school to develop, and have a faculty and an administrative staff hired at least a year before school classes open, then you can probably design a curriculum logically. You can get into workshop groups like this and say: "I want a philosophy of education written in two weeks. Then, I want a set of understandings, skills and attitudes that we want to develop for this school. I want to know what kind of changes we want to make in kids so that when they are through the twelfth grade they are this way. Next, I want to know what each discipline can do about this -- which ones are each going to accept?" Then down to the courses.

The division of objectives among the disciplines; the division of discipline objectives among the courses: the units, the lesson plans. Finally, you can develop a course of study down to lesson plans.

This is the logical way to develop curriculum: beginning with a philosophy and going from a general philosophy to the working operations of the philosophy: its objectives, its understandings, its skills, and its attitudes. Then you go from there to what each discipline is going to accept of these. You don't care about overlapping. You want to hit them high and hit them low, sometimes. Then, which courses of study within each discipline are going to take which part of citizenship, which parts of worthy use of leisure time, or which part of vocational efficiency. Then, how are you going to write units, and out of the units, how are you going to write lesson plans to do this.

You can plan a school plant and the activities to forward your curriculum, too, but not in one year. This, of course, would be the ultimate: to plan the curriculum and then design a school plant to fit it. Then form would follow function and you would have the plant needed to perform the functions that you require in your school.

As we build we must study form. As we build we must study scope (the breadth of the curriculum). We must study the sequence -- what comes first? What do we need? It is pretty clear that we need Algebra I before Algebra II, but it is not clear that we need Algebra II before or after Geometry. The boys are still arguing about that. What do you need in math before you take physics? You need to think about sequence, not only in your discipline, but also for horizontal articulation which we had been talking about.

You need to study readiness -- in spite of the fact that we now tend to quote the statement that any child can be taught any discipline at any time in some educationally sound way. In some educationally sound way is, of course, the weasel-word here. The point I like to ask here is: what does the kid not get when you take him out of the general idea of readiness that we have. Not only is he ready for this, but there are a lot of readinesses. If you are having the kid learn Greek at four years of age, what isn't he learning that he is also ready for? This is a real problem, and we don't know much about it either despite Havighurst's developmental tasks and many of the other developmental studies we have.

Readiness of students, readiness of teachers and administration: you know, this is where much of our curriculum work fails -- teachers aren't ready. How many times in education have we torn-down going programs because they are not the best, and truthfully they aren't, but we have torn them down before the teachers were ready to do anything else? That's your business -- that's your fault! Don't tear something down until you have teachers who are ready to do whatever ought to be done instead.

Is the community ready? If you want to start a fight in the community, don't prepare them for it and change the report card. If the community isn't ready for such a simple thing as this, it is not ready for core.

Thinking about core, I always think about the seventh grader being quizzed by his school-interested parents. It went something like this:

(Parent) "What did you learn today?"
(Child) "Well, I had core."
"Did you learn any geography?"
"No."
"Did you learn any English?"
"No."
"Well, did you learn history!"
"No."
"Well, what did you learn?"
"I don't know -- core."

This isn't the parents fault, they should have been ready to understand that core means certain things.

It would cause you a lot less trouble if you will get your communities ready for the things that you do. One way to get them ready is to ask them to help. When you ask them to help they learn mostly more than you learn; never-the-less, I wouldn't be hypercritical about it. You have got to get them to help, but you must keep control.

You will have to study all this business of articulation of objectives. Not only do we have overlaps, but we have gaps in our objectives. If we will get them up somewhere where we can see them, and the process by which they will be achieved -- our structures, our activities, our units of work will make sense.

Vo-Tech Implications

How does all this relate more directly to vocational education? (Here's where fools rush in where angels fear to tread.) Maybe, vocational education should provide the skills, attitudes and understandings to begin work in a broad family of occupations, or in work in general. Then, industry or later schools would provide the specific first training and the upgrading in the job as changes take place. This in-service training could take place on the job, at home in individual study and in cooperation with public education institutions -- adult education, junior colleges, technical institutes, and so forth. (This concept is from the National Society for the Study of Education Yearbook.)

Educational Policies Commission in one of its latest publications, EDUCATIONAL OPPORTUNITIES FOR ALL THROUGH THE FOURTEENTH GRADE, in substance, has this to say: that we have to postpone technical or vocational education to beyond the twelve grade for two reasons: 1. there is too much to know these days (even if we learn the structure and techniques of learning), and 2. that twelfth graders are not socially and emotionally mature enough to be ready for the type of jobs available (beyond the semi-professional levels), and therefore, there is no use trying to teach them.

We must parallel our theory and our practice or kids won't stay in school; or they won't learn, if they are forced to stay. Vocational education as general education is for all. The type, extent, or time will differ. I think that kids who are going to be doctors should have vocational education. They should not have the same kind as those who are going to wind armatures, but they ought to have some. If we say that social studies or English are for all, then so is vocational education for all -- by the same reasoning not the same social studies or English or vocational education for all, but that which the learners can and will absorb at the time they are taking it.

Yes, a structure for all! But even the structure need not be the same for all. The structure of American History ought not to be the same for the kid in high school who knows in high school that he will be a history professor, and the kid who knows she will be a mother and family-person for the rest of her life. Some of it may be the same, but certainly not all of it.

In developing or revising our curriculum we must clarify our purposes so that all who are involved in schooling will understand. If the community, including our students, doesn't understand or believe in the school's purposes, we have the Harlem situation where parents demand control of curriculum, administration and the hiring of teachers. If teachers are not involved in planning, so that they understand and accept the objectives and procedures of the curriculum, then the course of study is ignored, sabotaged, battled, or followed in organization and not in spirit.

One time just before the second World War, I became part of a task force to go to St. Louis to evaluate the school system. I became a sort of a minor-hero for a couple of days because I found a set of courses of study for the St. Louis schools down in a basement of a junior high school (after the principal told me where they were). I ask if they didn't use them.

She answered:	"Why of course not!
I asked:	"Why not?"
She responded:	"Oh a bunch of smart guys from Chicago came in here and built this curriculum for us. We don't know anything about it. It's not ours."

And so, it was wrapped-up in newspapers, behind the auxiliary furnace down in the cellar. This was the only set of courses of study for St. Louis that we ever found.

If the administration and the school board doesn't really believe, then financial support and active supervision are likely to be sparse.

For vocational education, if organized labor doesn't actively guide and support the curriculum, much discouragement on the part of teachers and students will result when there are no jobs available for graduates unless they are members of a family of a present job holder. (You know that story, particularily in many of the craft unions.) If business and industry are not advising and aiding in articulation of its business and industry schooling with that of the public schools, then gaps and overlaps are sure to develop.

The Penn State-Rutgers[1] study says this about school-community interaction: "Participation or involvement of the community in the education of youth should be greatly increased. This means both business and organized labor. As it is now (neither employers or union officials are particularily concerned with what schools are doing. To become involved will create more positive attitudes." In the general conclusions of the study it states: "All segments of the society including business, industry, government and organized labor should play a more active role in the structure and execution of vocational offerings. The active participation of advisory committees holds much promise for improving vocational education. This contact stimulates educators to keep their offerings geared to community needs. It also increases support from employers and organized labor since the schools are following their advice."

Did you ever belong to a school system where suddenly they needed a bond issue passed? They put it up to the public at the last minute -- and it got voted down. Then what did they do? They developed a lay advisory committee for better schools in our town, -- they do the thing they should have done two years before. They inform (propagandize) the committee about the needs of the school. They even have the teachers talk to the kids about it. So finally, the community gets informed in an unscientific and one-sided way about the problems. Next time the bond issue comes-up, it gets passed. The schools would have saved themselves a great deal of trouble if this information had been carried-on all the time with the community.

I know that people in the community get obstreperous. At State College, where every child in the public school is a genius because his parent is a professor at Penn State, the mothers got together at one time and decided that they were going to write the English course of study. By gosh, they tried! They got steered out of it after a bit; but the problem arose from a lack of communication.

Vocational education is responsible with every other discipline in schools for doing its share to change students: educating them according to all the Cardinal Principles, or other sets of objectives accepted as education for the school. As the number of work hours decreases, as vacations increase in length, the products of our vocational departments will spend more time in worthy use of leisure time, home and family life, citizenship, ethical relations, moral and spiritual values (you know what I am quoting). These are the other six of the Seven Cardinal Principles.

I don't have to quote to you all the early studies which show that people lose-out in business and in vocations of all kinds because they can't get along with other people -- not because they can't be taught the techniques. Some of the studies go as high as seventy percent of people who lose-out on the job because they can't get along with other people. Vocational education must provide more than a skill. It is the function of the teacher to include in the context of his disciplines opportunities for precept and example in all or many of these attitudinal objectives. For only if the objective is realistic to the student, will he apply it to himself.

Dean Jackson, Dean of our College of Agriculture for many years, said that one of the best places to teach moral and spiritual values was in a course in seed culture for sale. He said that it is easy to teach these kids how to grow the seed, but the thing you have to teach them is what to put on the back of the seed envelope. If there is a germination rate of sixty percent, say sixty percent and not "nearly all" germination. This is the thing that you ought to teach in relation to seed culture, not in another course somewhere.

A man I know named John Patric wrote a book: THE REPAIRMAN WILL GETCHA IF YOU DON'T WATCH OUT. He took an automobile and had it in absolutely perfect shape. Then he started across the country and took this automobile, with a set of pre-developed complaints, into good sized towns. He would go to an automobile mechanic, tell him his compliant, and say he'd be back in an hour. When he came back and the mechanic had fixed the complaint, he asked for the bill and a detailed explanation of exactly what was done. The mechanic would write out on the bill what he did and the charges. Patric wouldn't protest at all. He would then go to another mechanic in the same town -- then to other towns. When he finally got across the country, he used the name and addresses of these people to show how nine-tenths of the people who had worked on that automobile lied about what was wrong with it and what repairs had been done.

Later, he did the same thing with watch repairmen (THE WATCH REPAIRMAN WILL GET YOU IF YOU DON'T WATCH OUT), and it was just as bad.

I hope you see what I am trying to say. This is our business in schools, my friends.

Paraphrasing again from the Penn State-Rutgers study: the most prominant omission in vocational education is the failure to develop programs for those students who cannot profit from present offerings. This means to meet the needs of student populations, as well as, the needs of business. In some places, at some time, vocational education has been the dumping ground for all the social and the academic misfits in the school. Its natural reaction in many places has been to admit only students of average or better intelligence and attainment. Both of these extremes must be avoided.

I'm reminded of your own Prosser who talked about the submerged sixty percent of high school students in that famous Prosser Resolution of twenty years ago.

In the magazine, School Shop for January 1968, Worthington asks the question: "How are you going to prepare pupils for unskilled jobs?" Worthington says that there are ten million semi-skilled service workers jobs and fourteen million operatives in the United States today. If this is anywhere nearly the truth, there are twenty-four million semi-skilled jobs.

I think that part of the answer, at least, is in broad families of jobs where workers can work up through various steps in the family.

Recommendations from the Penn State-Rutgers study indicate that: "Secondary education (not vocational education) should be re-oriented to provide offerings of an occupational nature for those students who expect to obtain employment after graduation, but who do not wish to commit themselves to one of the traditional vocational education programs. New programs should be devised that are comprised of occupational clusters and are taught by appropriately prepared teachers in work-oriented settings. These programs should provide opportunities for vocational exploration, as well as, for familiarizing students with the basic skills that are characteristic of the occupational clusters."

To develop a curriculum to meet job family or job cluster concepts is the work of the whole faculty over a considerable period of time. This is especially important in the case of vocational education because many of the teachers in vocational education are considerably better prepared to teach woodwork, printing or auto mechanics than to teach students, to aid in the broad guidance of students, in understandings of how pupils learn, and in the philosophy and objectives of general education. (I hasten to say that this statement is certainly true of some math teachers, some English teachers and some science teachers, but this morning we are concerned with vocational teachers.) The Penn State-Rutgers study points up the inadequacy of the guidance programs. "When considered in the light of need, it is the vocational, and not the academic or general curriculum, graduate who needs guidance the most, (but gets it the least)." The guidance program in all the secondary schools will be only second-rate at best unless all teachers are given, and take, far greater responsibility for all types of guidance than they now assume.

Summary and Conclusions

I hope you understand by this time that I am sure that no department, no discipline, no grade or section of public schooling alone can plan a curriculum for its students. If it were possible to do so, it would be terribly costly and terribly inefficient. Students should learn the why as they learn the how. They should learn the math and the physics and the reading as they learn gear-ratio and AC - DC current. They should learn the history of tools as they learn to use them, and learn to construct or modify tools to meet specific needs -- as the master craftsman before them did. They must learn to read what others have written about business and industry, and they must learn to write their own thoughts and ideas on the subject. Here is where articulation among vocational education, science, math, history and communications takes place.

The implementing of this articulation can come through a wide variety of procedures. Take the ones that fit your teachers, your community, your needs, your students best. Think about how parallel scheduling of courses might help -- vocational with math, science, or communications courses. Think about team teaching in blocks of time -- and if your people are frightened about team teaching, or you think you have to have modular scheduling, remember that the essence of team teaching can be done with one teacher if he gives in the first part the general overview then divides his class into small discussion groups, and provides time for individualized study, research and laboratory work. This can be done by one teacher in one class. Now it is true that the expertise can be heightened by getting experts in, but don't think that because you don't have modular scheduling, or that you haven't got the fluidity that you think you have to have, that you can't do anything about modifying this basic idea.

Think about parallel scheduling, team teaching, ETV (as a supplement to certain procedures); broader units in vocational education curriculum could be used. You could use inter-departmental projects. Many of these things could help.

Referring to the Penn State-Rutgers study again, we are made aware that: "Many experiments have been, and are being, conducted for the purpose of developing new methods of teaching youth preparing to enter the labor force after graduation. Such new methods include: new grouping patterns which recognize individual differences among students; revision of curriculum for the purpose of stressing student inquiry into basic concepts, principles and processes; and flexible scheduling procedures." These developments, in general, have been ignored by vocational educators.

Out of the Appalachia Advance: "Combined vocational and academic offerings into a single comprehensive curriculum is the goal of an effort to develop an improved secondary school program during the next five years. Fourteen high schools in thirteen states have volunteered to participate."

I would like to conclude with a chart (Curriculum in Public Schools) which I developed. I wish you would look at it and kind of pray over it.

The curriculum is divided into three parts: general education, education for a job and education for personal fulfillment. Now, jobs often are personal fulfillment. I have world cultures here as general education, cultural anthropology has an application in personal fulfillment (for example if you were going to teach antiques). As far as you are concerned, industrial arts is general education, auto shops as a tendency toward a job and antique autos as a place for personal fulfillment.

The divisions between parts are dotted lines in this schematic type of presentation. The divisions and times are not hard and fast designations.

I think I will stop here. I hope you will pardon me for any slips which show my inadequacies in vocational education.

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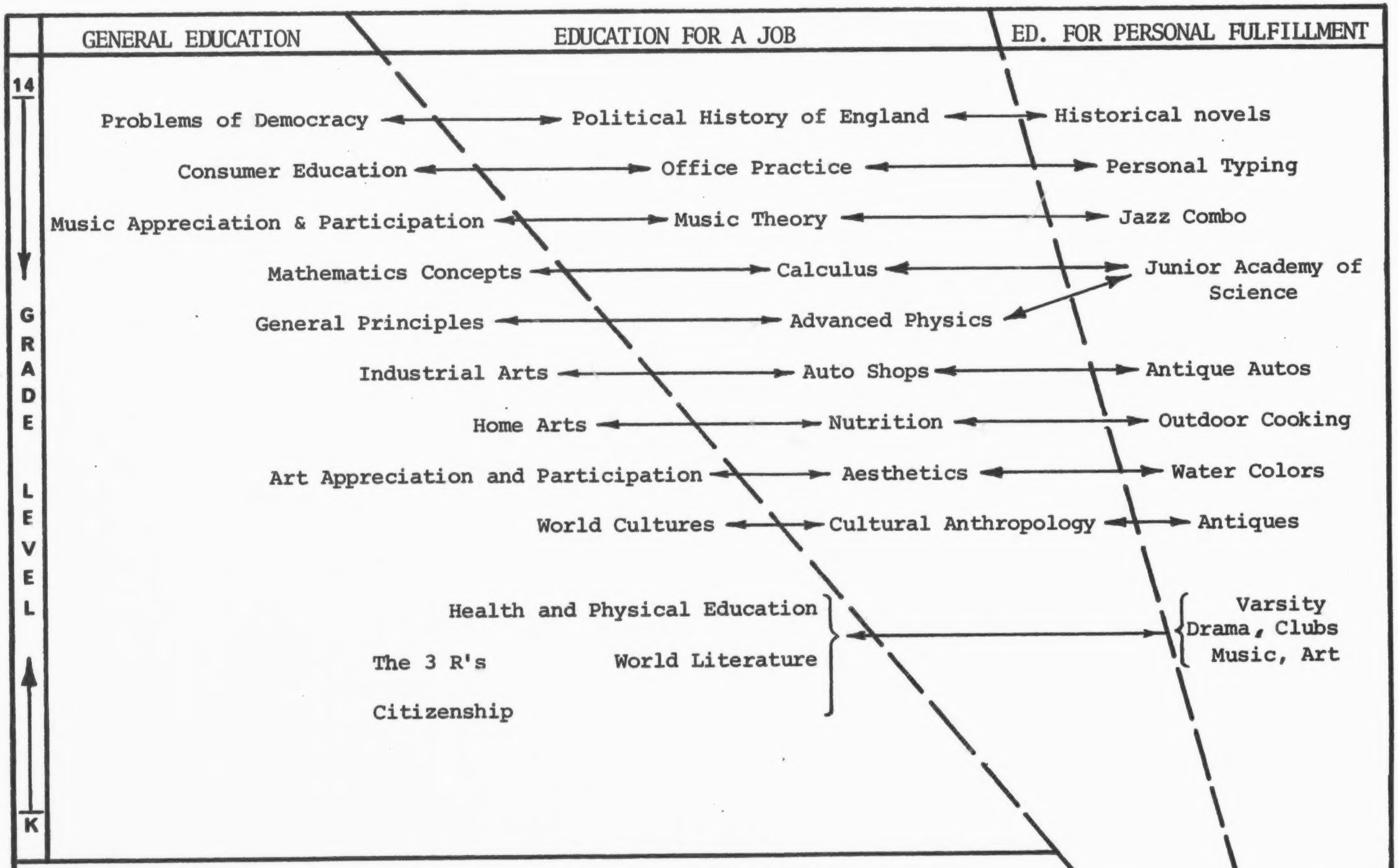
[1] Penn State-Rutgers Study (Passim)
J. J. Kaufman, et.al. THE ROLE OF THE SECONDARY SCHOOL IN THE PREPARATION OF YOUTH FOR EMPLOYMENT. The Pennsylvania State University. February 1967.


GENERAL EDUCATION
EDUCATION FOR A JOB
ED. FOR PERSONAL FULFILLMENT
14
GRADE LEVEL
K
Problems of Democracy
Political History of England
Historical novels
Consumer Education
Office Practice
Personal Typing
Music Appreciation & Participation
Music Theory
Jazz Combo
Mathematics Concepts
Calculus
Junior Academy of Science
General Principles
Advanced Physics
Industrial Arts
Auto Shops
Antique Autos
Home Arts
Nutrition
Outdoor Cooking
Art Appreciation and Participation
Aesthetics
Water Colors
World Cultures
Cultural Anthropology
Antiques
Health and Physical Education
World Literature
Varsity
Drama, Clubs
Music, Art
The 3 R's
Citizenship

CURRICULUM IN PUBLIC SCHOOLS

SCHEMATIC:
TIME DISTRIBUTION

Robert B. Patrick

ROLES OF OCCUPATIONAL EDUCATION IN THE JUNIOR AND SENIOR HIGH SCHOOL

Mr. T. N. Stephens, State Supervisor
Introduction to Vocations, North Carolina DPI

THE PROBLEM.

Preparation for the world of work is an essential function of any society. Currently, there are many forces inter-acting which influence emerging patterns of the occupational world. The development of the large urban complex, population growth and changing work characteristics, the imbalance of manpower supply and labor market demands, acceleration of technological developments, and challenge of automation are illustrative of conditions which have major implications for programs for preparation for the world of work.

Present day America finds itself in a paradoxical position. At a time of unprecedented prosperity there are fewer opportunities for some members of our society. Output and employment have risen in record levels, but unemployment continues to be a major social and economic problem for almost four million potential workers.

Contributing to this situation is the fact that many people are unemployed because they lack employable skills. There is a great need to equip people with the level of knowledge and skill required for new and different job opportunities. Of special concern to us is the unemployment of youths between the ages of sixteen and twenty-one. Unemployment in this age group is about three times the level of the total labor force. It is estimated that 1,100,000 young people between sixteen and twenty-one are neither in school or at work. Not only do the unemployed contribute nothing to the society and the economy, but their impact on the community is also felt in increased welfare payments, delinquency, crime, immorality, and indifference. Unemployed people often rear their children in their own image and thus accelerate the cycle.

Compounding the immediate problem of the large number of unemployed youths is the fact that each year of the 1960 through 1970 decade will bring even more people into this age group. While 2.8 million Americans reached age 18 in 1963, 3.8 million reach this age in 1965. The ever increasing number of young people, along with a simultaneous decrease in the number of jobs for them to fill, presents a challenge in itself.

In order to maintain an expanding economy provisions need to be made to deal with the problems of preparing young people for their initial work experience. This is not a problem that will solve itself. The solution depends upon an orderly, systematic, concentrated and direct attack at the source of the problems. This attack is deserving of the support of educational and other public agencies, as well as, private business, management, labor and citizens.

Defining Occupational Education.

We should start by recognizing that guidance and occupational education are properly a continuum from the elementary schools to junior and senior high schools, the area schools, the colleges, and universities, and not a collection of separate programs, planned and conducted in isolation from each other.

Even to talk about the subject we must use a common definition, occupational education. The following definition is used in this presentation: occupational education is education designed to contribute to occupational choice, confidence and advancement. It includes vocational education, technical education and education for the professions. It also includes the basic education required for occupational confidence, occupational information and guidance, and the contributions of the practical arts, the language arts, science, mathematics and other types of general education.

Although occupational education goes back beyond the dawn of recorded history, its structure has changed as man's social structure has changed. We find that until recently man's need for vocational education was satisfied largely by apprenticeship in one form or another. It was just fifty-one years ago that passage of the Smith-Hughes Act provided the first funds for vocational education. In 1937, the George Dean Act not only provided additional funds for agriculture, home economics and trade and industrial education, but also provided for the training of students in the distributive occupations. In 1961, the panel of Consultants on Vocational Education was appointed by the President and charged with the responsibility of evaluating the current vocational acts and making recommendations for change. The Vocational Act of 1963 followed this report.

In many respects, the Vocational Act of 1963 provided a new direction for vocational education and an opportunity for greater flexibility in pursuing it. By eliminating designated occupational categories, it became possible to offer instruction in all occupation fields. The way was cleared for making vocational education available to all persons in all communities.

Occupational education's role in today's comprehensive high school should be considered as a part of the school's total role. A role that is changing rapidly as society demands more and more of the public schools. Simply stated, that role is to provide pre-employment training. Performing this role effectively and efficiently, however, is not simple.

Concepts, such as the following, are basic to redefinition of occupational education's roles:

1. Occupational development continues throughout life, or at least until retirement.
2. Everyone is in need of appropriate occupational education provided at the time in life when it is needed.

3. Occupational education is not confined to federally-aided programs of vocational and technical education.

4. All units in the system of public education from the kindergarten through the university should contribute to occupational education.

5. All professional personnel in public education agencies could, and should, contribute to occupational education.

6. Basic and general education is required for successful vocational specialization.

7. Occupational education can be used to hold students in school and to secure the basic and general education they need.

8. We may expect that a larger and growing number of the school population will remain longer in school than those of preceding generations; and that many will postpone specialized preparation until after the completion of high school.

9. We may also expect that a high percentage of the population will discontinue full-time schooling on, or before, high school graduation; but that a large part of these would accept part-time school and an appreciable number would return to school full-time if appropriate offering were available.

VOCATIONAL ROLES: JUNIOR - SENIOR HIGH SCHOOL

What then is the role of junior and senior high school in providing occupational education?

Pre-Vocational

The role, as I shall define it, is derived from the thinking of many people, from readings I have done and opinions of the North Carolina Governor's Commission to study education in the public schools from grades one through twelve. Many of the proposals I shall make this afternoon come from this latter study and from recommendations that have arisen throughout the nation.

As we take a look at the roles of junior and senior high schools in providing occupational education, we will notice that I place prevocational training as being the first role. You may well ask: "By what means are you justifying pre-vocational training under vocational education?"

If we take a look at the latest report of the Advisory Council on Vocational Education, their first operating principle was the following: "Vocational Education cannot be meaningfully limited to skills for traditional occupations. It is more appropriately defined as all those aspects of educational experience which help a person to discover his talents, to relate them to the world of work, to choose an occupation, and to refine his talents and to use them successfully in employment. In fact, orientation and assistance in vocational choice may often be more valid determinants of employment success, and therefore, make a more profitable use of educational funds than can specific skill training." In addition to this, the council has recommended the redefinition of vocational education that will be presented (or has been presented) to Congress. This redefinition is as follows: "Pre-vocational training in the employability skills should be included within the definition of vocational education." We are all familiar with the legislation that has been credited to Dr. Grant Venn of allowing funds to be used for pre-vocational programs.

Then, I believe that we have to consider common sense as being an important factor in placing pre-vocational education under vocational education. We know that we cannot offer the specialized courses in vocational education at the tenth and eleventh grade to students who are there simply because they are uninterested in other schoolwork. In North Carolina, we feel that if we have a good pre-vocational program; students who come into the specialized programs at grades ten, eleven and twelve will choose areas in which they have a real interest and aptitude.

There is a tremendous national interest in the pre-vocational program in North Carolina. If this interest is indicative of national feeling, then certainly there is general interest. As supervisor of this pre-vocational program in the state, my office has received inquiries from forty-five states, two territories, Germany and Sweden.

To help me understand what other states were doing in pre-vocational education, I wrote to each state director of vocational education last summer to determine the kinds of pre-vocational programs that were operating in their states. Although none indicated a state-wide program, such as the one we have, many thought that such a program was needed, and had plans underway to institute such a program.

Typical Pre-Vocational Programs

For the next few minutes I would like to review with you some of the pre-vocational programs across the nation.

The first is the Spearman School District in Texas. They call the program, Subject Matter of Career Integration. It was instituted during this past year. In this program, each subject matter teacher is assigned one month during the year during which he is to teach a unit of instruction on careers which are closely related to his particular discipline. The teacher's role in career development under this approach is to provide opportunities for youngsters to learn more about careers in the subject matter area by having them do such things as seek part-time work, write papers on appropriate careers, write professional associations for information, read occupational briefs, give oral and written reports, interview workers on the job, invite resource people into the classroom to discuss their work, and numerous other activities. The program is designed so that no student studies careers in more than one discipline at one time. This is avoided by having a program coordinator who develops a yearly calendar for the occupational units. This approach has the advantage of involving the entire school faculty in the career development process and, hopefully, make all the teachers more occupationally conscious.

The second program was in the District of Columbia and involved experimental orientation programs during the summer of 1967. Three vocational high schools offered exploratory shop experience in at least six occupational areas. Each student received a one-week orientation in each of the shops into which he was accepted. Supplementary classes in occupation information and job-conditioning were provided, as well as, an intensive counseling service. The program was a regular summer session running from mid-June to early August. Some areas in which the youngsters had an opportunity for exploratory experience were auto repairing, electrical appliance repairing, printing, welding, upholstering, machine shop practices, advertisement arts, barbering, clerk-typist, drafting, photography, retailing, cosmetology, food preparation and service, health occupations and vocational housekeeping. This was not a training program; it was one of exploration. It should be noted, however, that part-time work experience was offered to those interested students who wished to receive on-the-job training.

The State of Rhode Island initiated (this past year) an industrial arts and pre-vocational program called Pre-Vocational Rotating. In this instance the course is taught by industrial arts teachers. In the program students cycle through six-week periods spending one hour per day in six shop areas: machine, graphic arts, auto mechanics, painting, electronics and woodwork. This process enables students to become acquainted with the world of work in each of these areas. The experience gained during this year should allow the individual, with advice and assistance from his counselor, to make a more intelligent selection of the vocational field in which he wishes to specialize.

By far the most common type of orientation program discovered was that maintained within the regular curriculum. These were occupational units usually taught in the English or social studies courses. They varied in length from two weeks, in some cases, to as long as a full year in others.

New Jersey is one of two states which has an occupational orientation program entitled, Introduction to Vocations. This is considered a pilot program. The program is organized as an integral part of the overall ninth grade educational and school guidance program. It is designed to aid students in gaining occupational awareness. It also seeks to give students a better foundation for later career development. Emphasis is placed on short term manipulative exploratory experiences on a cycling basis.

The cycle includes units in a minimum of four areas: industrial arts, home economics, business education and science. The length of a cycle ranges from two to three weeks: one period per day. The time allotments are flexible and vary with the need of individual group and the availability of facilities. In the cycle, the teacher of the discipline exposes students to the manipulative and informational units pertinent to the occupational area. Field trips, speakers from business and industry, films, film strips, occupational literature, and individual and group guidance, have been effectively used in the cycling unit to enhance and strengthen pupil awareness. The typical arrangement of cycling might include such things as health services, business education, science laboratory techniques, clothing, food, economics of industry, electronics, auto and power mechanics, mechanical drawing, graphics, metal shop and wood shop.

I will discuss North Carolina's Introduction to Vocations program, later, with my discussion of role patterns. I would like to return, now, to the roles of the junior and senior high school in providing occupational education.

Skill-Type Education

The second role that I see is that of providing occupation education of the vocational skill type. At the tenth grade, I would see the program as exploratory, and clusters or groups of occupations would be studied. Let us look at trade and industrial education to see what might be done in such an exploratory program.

Some characteristics of this program would be: that it would operate for one period per day, and would be a basic area required of all trade and industrial students. Some clusters would include: the auto industry, construction industry, textile industry -- as many as six different jobs within an industry would be explored.

Placement - Follow up

The third role, I see for junior and senior high schools is that of placement and follow-up. This is perhaps the area most neglected by the public schools. We will all agree that we need to know how well our products are performing once they leave the school. We can determine this only by the success of students on the jobs, or in post-secondary training institutions. Business, industry and advanced schools need to provide feedback to the public school. This information has tremendous implications for program planning, as well as, for program evaluation.

I, personally, feel that the schools also have neglected, for a long time, proper placement and follow-up for dropouts. They, too, are our students and deserve the best guidance and follow-up that we can provide them.

High school and post-high school occupational education must be considered as a continuum. Preparation for the world of work is a process, not an event. Moreover, this process will continue throughout one's working life, and will involve updating and retraining from time to time.

We would be in error to consider as separate entities high school and post high school occupational education. To do so would not be in the best interest of our students, neither would it contribute to the most efficient use of our limited resources. We must make a greater effort to articulate high school and post high school education in order that students may progress from one level to another with a minimum of duplication in courses and course content. Therefore, it is necessary for the public secondary schools to assume a much more dynamic role in placement and follow up than they have to date.

PATTERN FOR OCCUPATIONAL EDUCATION

At this time, I would like to propose a pattern for occupational education in the junior and senior high schools.

I would propose that grades seven, eight and nine would be the time for pre-vocational or occupational orientation. Moving into the tenth grade, with one hour a day, an exploratory or introductory program would be provided in all of the areas: agriculture, distributive education, home economics, T and I, office, and business. At the eleventh and twelfth grades all the occupational areas would be either preparatory, or cooperative programs. Then, of course, students would move into either the post-secondary schools, or to employment.

OCCUPATIONAL EDUCATION EVOLUTION IN NORTH CAROLINA

As you move into the week, you will be discussing innovation. You will have various definitions of what innovation is, but I think that we can safely say that change is one thing that innovation is. If this is so, how can change be brought about? I would like to share with you how some change has been brought about in North Carolina.

The Problem

In 1963, prior to the 1963 Vocational Education Act, the State passed legislation for the improvement of vocational education. This legislation was based on a study conducted in the state which found that of each 100 students in fifth grade, forty-eight had dropped-out of school by normal graduation time. Of the fifty-two who graduated, nineteen went on to higher education; this meant that eight-one did not receive training beyond high school. The schools were providing strong college preparatory programs for those who remained in school, but very few students were actually taking advantage of it. This situation disturbed educators, legislators and the governor. The governor, with his advisory committee decided that it was time that something was done.

To show you how well we were preparing these 81 of the one hundred who did not go beyond high school, this was the pattern for vocational offerings. At grades nine and ten where our heavy drop-outs occurred, agriculture and home economics was available. There were no vocational offerings in the city schools at grades nine and ten. There were very few vocational offerings in grades eleven and twelve -- these were in the large cities. In talking with the state supervisor of trade and industrial education, he stated that there were less than seventy trade and industrial programs in North Carolina at the high school level prior to 1963 -- and even fewer distributive programs.

The legislature then appropriated one and one-half million dollars to try a pilot project. This was an effort to develop a more comprehensive and diversified program of vocational education. Two significant aspects of this legislation were: 1. the establishment of a pre-vocational program at the ninth grade, and 2. the establishment of exploratory courses in distributive, and trade and industrial education at the tenth grade.

The Program

Very briefly, I would like to review our pre-vocational program which is called, Introduction to Vocations. (Copies of our new teachers guide will be mailed to you in the near future.) The major purpose of this program was to help students to develop techniques for educational and vocational planning.

If you think back to the time that you were an eighth-or ninth-grader, the decisions you had to make at that time pretty well helped influence the course of your life. Many of our youngsters have little information to base their decisions upon -- the Introduction to Vocations course seeks to aid them in this important decision making.

The course objectives are, as follows: 1. to help students appraise their interests, aptitudes and achievements, and relate them to occupations; 2. to develop an understanding of changing employment patterns in the world of work; 3. to develop an understanding of the basic processes in the American economic system; 4. to become acquainted with the major occupational fields; and 5. to develop a healthy attitude toward work.

In order to teach the above, we have six major areas of study. The introductory unit (about three weeks) is entitled, Relating one's physical characteristics, educational experience, aspirations, interests, aptitudes and abilities to occupations. This is not a time of sophisticated testing. A representative cross section of jobs are selected and students take a look at the physical characteristics of persons engaged in the occupations; what kinds of educational experience were needed for job success; what were the persons aspirations, interests, etc. The students then seek to determine which of the characteristics they possess.

The second major unit (covering seven to nine weeks) is to relate the economic system to occupations, and to us. Industry tells us that we are not teaching basic economics to our students. When they say basic, they do not mean principles of economics, they mean such things as budgeting. (One furniture manufacture gave the illustration of a worker who went to work for a competitor for a five-cent salary increase; yet, on his former job he would receive a three-week bonus at Christmas time.)

These are the things we hope to provide understanding of in the course -- to encourage students to take a more realistic look at the economy. They compare the economics of different countries. They take a look at different kinds of business organizations. They form corporations in the classroom where they follow the regular organizational structure of industry; decide upon a product, manufacture it, dispose of it, and dissolve the corporation.

The third unit is the first occupational category: exploring mechanical jobs. Representative jobs from these are selected for study. Students read about them. People who work in the jobs are brought into the classroom to discuss their work with the students. The students go on field trips to business industry and agriculture to observe workers on the job. They see movies, film strips and other types of illustrative materials which help them get better insights into the jobs -- trying to relate these characteristics, to jobs and back to themselves.

We spend about the same amount of time in similar activities exploring the clerical, sales and service occupations. You may recognize this occupational breakdown; it is the same as that used by the Employment Security people.

The last of the occupational categories involves exploring the professional, technical and managerial jobs. We purposely place this last because this is the group of jobs that students seem to most easily identify. We hope that, by placing this group nearer the end of the school year students will be more realistic in looking at this area. (We have some research which indicates that they are -- the students were not nearly as selective about what they want to do, as were "control" students.)

At the end of the year, on evaluation, students review what they have learned about work, what they have learned about themselves and with the aid of the counselor, they plan for entry into a training program at the tenth, eleventh and twelfth grades that will be more meaningful and realistic for them.

You might be interested in the growth of the program. It started out as a pilot program in 1963-64 with twenty-four hundred students in forty-five schools. This past year, we had sixteen thousand students involved in two hundred thirty-seven schools.

The following is typical of the tenth-grade program in trade and industrial education in our state. Students enrolled in the tenth-grade exploratory program spend approximately six weeks in each unit in a family of occupations. Hopefully during this time they will identify one job area that they would like to pursue in grades eleven and twelve. If so, they could go into one of the specialized programs in carpentry, bricklaying, etc. This procedure would also be followed in other occupational areas.

In agriculture there would be an introductory phase in grade nine, the exploratory phase in grade ten and at the eleventh and twelfth grades they could specialize in business, live stock production, mechanics, horticulture, etc. -- there must be some twenty-five to thirty options, now.

This is the essential pattern, today, as opposed to that in 1963. So, innovation can take place, but it does take money, and the matter boils down to who is going to supply it. Are we going to supply it or are we going to Washington for it. The million and a half dollars was not a great deal of money but it did get us started in a direction -- the '63 Act has allowed us much more flexibility to move into the tenth grade level.

ROLES OF OCCUPATIONAL EDUCATION AT THE POST-HIGH SCHOOL LEVEL

Mr. Robert M. Knoebel, Assistant Director
Bureau of Community Colleges, Pa. State Dept. of Public Instruction

I want to commend you folks for your willingness to take time out to discuss what may be done to improve occupational education programs in the United States.

Each of us is interested in innovation and change. I don't believe that I need remind you that we are in a period of change. I think that one of the greatest errors we could make would be to think that we should bring about change just for the sake of change, or innovate for the sake of innovating. However, we are in a period when things are happening.

I have some illustrations that I would like to read to you. The first two are excerpts from letters written to Cape Kennedy by youngsters. I think that they are illustrative of the day and age in which we live.

> I'm getting ready to launch Eagle III, a three-boy rocket to Mars, but I'm not sure if the fuel will get us there. I plan to use Murine, Get-Set Hair Spray, merthiolate, Old Spice after-shave lotion, VO5 and rubbing alcohol. Is this the same fuel you use at the Cape or have I left something out?

> I'm twelve years old. My father tells me he will have to cut my allowance due to the extra taxes he pays for the experiments for rockets to reach the moon. So, if you can tell me why it costs $30,000,000 for one rocket that doesn't even reach the moon, how much will my allowance be cut when one does reach the moon?

We still have some commonalities in this age. I think that these are expressed by the following brief notes:

> I'm interested in space and would like to become an astronut.

(and)

> How do rockets get through the earth's gravy?

A co-worker wrote the following as a want-ad to illustrate the day and age in which we live:

> WANTED! Men or women to work on nucleur fissionable isotype molecular reactive counters and three-phase cyclotronic uranium photosynthesizers. NO EXPERIENCE NECESSARY.

All we need to do is to look into the daily newspaper and we find many of those words in connection with today's occupations.

Definitions

I think it would be well to take a look at one or two definitions -- many have been reviewed already during this program. The matter of curriculum has been well defined by Dr. Patrick this morning.

The term, occupational education, was referred to by Mr. Stephens a few minutes ago in relation to secondary education, and lower grades. As I use the word, I will be thinking of a wide range of occupations other than the so-called professional ones.

Actually, we can divide all occupations into six major subdivisions: 1. professional, 2. technical, 3. craftsmen, 4. managers, 5. operators and 6. laborers. Those of us interested in occupational education can consider ourselves in all of these except with the professionals. This is particularily true in terms of Public Law 88-210. This body of workers of our concern is responsible for all of our society; including the economy, listed as culture -- or whatever you want to call it.

As I use the term, I will be thinking of occupational education as including all five areas, but in particular the areas: managers, technicians, craftsmen and operators. We have great responsibility for helping to prepare people in these areas.

Now a word as to what we think of when we say technical education. Here, we will be thinking of those programs designed primarily to prepare individuals for employment very close to the professional group and extending almost to the craftsmen group. The technician is one who works to support the professional. He is not limited to engineer-support, but also relates to health professions -- and even to social scientists.

Innovation

We understand that innovation means change -- another way of doing things -- but I believe we need to think of it in terms of several aspects.

We have talked previously about curriculum, and you will be talking further about innovation in curriculum. I cannot help but believe that what Dr. Patrick said this morning was extremely important -- that to begin innovation you first need to think about philosophy and objectives. This is one part of innovation -- the starting point.

One of the real hinderances that we have had in making changes, for the good, has been that people are not willing to develop philosophies as to how this should be done, when it should be done, and by whom it should be done.

The content of curriculum certainly provides another opportunity for making changes. It may be that, unless we do make some changes in our content, we will not be innovative. This specific segment needs attention.

Another segment relating to the matter of change is methodology, or techniques. In this area, I am thinking of how we do the job of preparing people for occupations. You can cite many illustrations of different methods which have been used. There is no corner on one or two procedures for doing the job. In some cases, we may continue to do it as we have done for many years. In others, it may be necessary to employ entirely different procedures. This includes the types of materials we use, how we use them, the devices that are used for implementation, and many combinations of these as found in the field of teaching.

Another aspect of innovation we must consider is scheduling. It seems to me that we have a lot of room in curriculum innovation in terms of how we schedule instruction. Let me provide a few illustrations illustrating this point.

Idaho State University has a very interesting occupational education program which ranges from operator-type education up to highly skilled technical education. They have three-year programs in electronic technology and, on the other hand, have three or four week programs in welding. A short time ago they also initiated an eleven-month program in auto mechanics. This latter program doesn't fit in with any academic year, but they found that they could do the job in eleven months; they could recruit students for the program; and employers were anxious to get the product. (It seems to me that this is the type of innovation we should be thinking about all the way along.)

I think, too, of Miami-Dade Community College. At one time, the president there was not sold on occupational education in the comprehensive community college. He has become sold, and strongly supports the programs they have been developing. In one of their programs, commercial pilot training, the school provides the classwork and contracts with private groups for flight training. In this way, they avoid the need for obtaining expensive equipment, and the problem of keeping such equipment up to date.

The preceding are samples of how programs may vary. I hope that, during this week, you will be thinking not only in terms of curriculum content, but also of all other aspects of education which provide bases for innovation.

Who Should Do Occupational Education?

There are people who believe that we in education should not be involved in occupational education. If you doubt this, let me provide evidence of this belief. I have a clipping, here, from the New York Times of June 30 (1968) which states that Secretary of Labor, Willard Wirtz, has approved the first allocation for training hard-core jobless in the Metropolitan area under the President's Job Opportunities and Business Sector: $6,000,000 will be used to train 2,495 men. Who will do it? Let me read a few of the people: American Airlines; Consolidated-Edison; Doyle, Dane and Birnbaum; National City Bank -- there are about eighteen or twenty such groups.

An article from the October, 1967, SATURDAY REVIEW, entitled, "New Voices in the Classroom" tells of the thinking of former Secretary of H.E.W., Gardner, Commissioner Howe and certain other people in regard to how you do the job of education -- including occupational education. These people are not training their guns exclusively on educators; they are merely thinking of other people who may act as educational resources. Before concluding this presentation, I hope to point out several statements related to this article.

I am convinced, however, that we in education do have the opportunity, a responsibility and the ability to do a good job in preparing people for occupations at the post-secondary, as well as, the secondary level. I do not think that we can sit back and say that we will continue our educational programs as we have done it for years. Certain aspects, perhaps yes, but certainly we need to be right on the firing-line, willing to make changes as change becomes necessary, and train our guns on some of the national problems. Whether we like it or not, if we are going to do the job, we need to get to the stage where it will not be necessary for the Secretary of Labor to provide programs with private industry, or for other outsiders to do occupational education programs to solve problems that should have been cared for before remedial situations arose.

I will not take time to belabor what has happened in the field of post-secondary education. We do know that the idea is not new -- Ben Franklin had a type of occupational education at the post-secondary level at his Academy. We have, growing and swelling throughout the country, a demand for an institution to fill the bill similar to that provided for in the Land-Grant Act more than a hundred years ago. You can be certain that, if the community colleges and post-secondary programs do not meet the needs for occupational education, another type of institution will arise -- or it will be done by some other agency for us. We cannot afford not to be innovative.

We have a wide range of types of post-secondary institutions across the country today which are offering occupational education. It is hazardous to say that one type is better than another. The point is that we must fit whatever we try to do into the needs of the service area in which we find ourselves. Those of us at the state level must look at the total needs within the state: for the manpower which can be prepared in post-secondary institutions. This planning needs to be done in cooperation with those responsible for secondary programs.

Issues and Problems

I have listed what I consider to be a few issues and problems which I would like to talk about, briefly, to help set the stage of your thinking during this week.

1. The American public has not fully accepted occupational education as a function of post-secondary institutions. I will cite an illustration.

As some of you are aware, we are in the midst of developing a community college program in Pennsylvania. The community colleges are sponsored by local counties, or cooperating school districts. We have one county where a great effort has been made to inaugurate a community college. There was, however, an owner of a popular newspaper who felt that anything done in a college should not relate to occupational education. He played up this idea in his paper. The people didn't get their community college.

They will get it sometime, but we will have to do a lot of work helping the general public understand that occupational education should, and can, be done in community college, or post-secondary institutions. Further, to understand that occupational education deserves the recognition that other programs have at this level.

2. There is a lack of acceptance by academic administrators of occupational education in post-secondary institutions.

Referring this point to my own situation: at the present we have twelve community colleges in the state (five new ones opened last September) and among them we have all sorts of administrators. Some are strongly oriented to, and wholeheartedly support, occupational education programs: others do not.

I recall one in particular who is quite reluctant about having any program of an occupational nature in his college. However, the pressures are such in the local community that he has to conform to the people's wishes -- and is so doing. Maybe eventually, we will be able to help him appreciate, more fully, that the college should be doing that sort of work.

I think that we have a responsibility to help academic people understand their responsibilities. It is not easy, but it is a job which must be done.

3. Another issue is the matter of status for students in occupational programs.

This is a serious matter, and I am not certain how we can overcome it. I hope that you people can come up with suggestions on how we can provide more status for our students in both post-secondary and secondary programs.

One thing that we all can do is to urge recognition at the post-secondary level through awarding of associate degrees, or appropriate certificates. There are people who oppose this idea, but more and more, people are recognizing that we must have this work-complement if our society, our culture and our economy is to survive.

4. Another problem is the lack of support by certain vocational educators of the occupational education concept.

It is unfortunate that all of us who are involved in occupational education cannot see that there is not a single level where the job needs to be done: that the job is an across-the-board operation.

Someone mentioned a few minutes ago that occupational education should start in kindergarten. I think that this idea was shared by Ned Frank's group assembled by Keppel at MIT. They took a hard look at vocational education -- involving many people who were not vocational educators. One of the things that came out of the meeting was the concept that much more needs to be done in the total educational structure to provide youngsters with an understanding of the significance of occupations in the workaday world.

I don't believe that we should be too critical of vocational educators, in some cases, for objecting to post-secondary programs, or for not providing full support. To elaborate this point, I would like to refer again to my home state.

Pennsylvania is planning for sixty-eight area vocational schools at the secondary level. We expect that within the next ten years we will also have between twenty-five and thirty community colleges. Most of the Public Law 88-210 money has been committed for construction of the area vocational schools during past years and for some time into the future. This situation is very disturbing because it means that little money is left for community colleges.

I think that this condition arose largely because people were sold more wholely on area vocational schools at the secondary level, rather than recognizing the total educational picture -- as I mentioned earlier. It seems to me that we cannot separate education and say that we must do the job at the secondary level, or that we must do it at the post-secondary level. What we must recognize is that the job must be done across-the-board.

Stephens pointed out that certain aspects of the job can be done at the secondary level. I think that we will see much more of this generalized type of program in secondary schools in the years ahead.

In all fairness, I must say that by-and-large we have had excellent support from vocational educators in Pennsylvania. We have just developed a new procedure for community colleges that we think will provide flexibility and encouragement for post-secondary programs. Our state director of vocational education recognizes that vocational education is intended across-the-board, and is doing his best to help us.

5. An item which has seriously hindered post-secondary program development has been the lack of state-wide planning.

We do not have it at the present time. We hope that a state-wide study, currently being conducted by Dr. Arnold, will provide us with a picture of our manpower needs, facilities and resources; helping us to identify the gaps and know where we should be going.

We could spend a great deal of time discussing state-wide planning. I am sure that you can see the importance of broad-scale planning as you think of curriculum innovation.

6. Another serious problem is educational manpower.

Where do we get leadership at the post-secondary level -- a leadership which has an appropriate philosophy and comprehensive understanding of post-secondary education? This question does not have a simple answer. We are not getting the personnel we need! Failure to plan carefully for the development of educational manpower is as serious, if not more serious, than building a new school building and leaving the roof off.

When we speak of educational manpower, we are thinking of needs ranging from presidents to aides. We have by no means explored the potential of using auxiliary personnel in our occupational programs. I hope that you will consider ideas for innovative use of auxiliary personnel in your later discussions. Some other areas of education are doing a much better job, in this respect, than we are.

7. Another issue or problem is failure to use advisory services as fully as we should.

Note that I have called them advisory services, rather than advisory committees, because it is not just an advisory committee that we need. We can gather more information and assistance through a service-type organization.

I would like to refer again to the Pocatella, Idaho, electronics program which has been very successful. The school is located a great distance from any large user of electronics technicians. So, the program leader uses the telephone to keep in contact with industry people -- with employers. To me, this is an innovative type of effort -- speaking in terms of methods rather than content.

We cannot afford to fail to use advisory services. If we want to get into difficulty with programs, all we need to do is ignore the use of advisory services.

8. Another issue we face at the post-secondary level is accreditation.

As you well know, it is not easy to have an institution accredited by one of the regional associations. An institution must have graduated classes before it may be considered for accreditation. Three of our community colleges have been accredited. Another with strong occupational programs is currently seeking accreditation. This school is having some real problems in seeing that their occupational programs contain the proper amount of general (respectable) education which the accrediting association requires.

Serious thought needs to be given to what really should be expected in terms of general education outcomes, and the number of these courses which are essential in order to provide respectability and the well-rounded individual the associations speak of. This is a problem we all must work at. Solution requires communication -- helping those responsible for accreditation to understand the true content of occupational programs, and that some of the characteristics attributed to a certain social studies course may be very well obtained from a specialized occupational course.

9. Whether we like it or not, we are going to be forced to consider the cost-effectiveness of our programs.

As you work together on innovation, you cannot help but keep this issue in mind. The pressures are on education, as they are on all other local or state-supported activities, to prove their worth. This pressure started with the Department of Defense and since has been spreading through all parts of government.

The problem of determining cost-effectiveness is not directly comparable to that involved in manufacturing a gun, or an airplane. Nevertheless, we will be involved in the process, and we need to think of it in terms of the curriculum we develop and the means used to prepare people for occupations. Public education practices are going to be compared to other procedures for doing the job outside of educational institutions. The major question to be answered is: "Can it be done more cheaply?"

10. The last issue, or problem, has to do with research.

I do not believe that we have enough programs similar to this institute where we really try to look at workable procedures for making essential changes. You can list many areas where we need research and cite instances where you have not been able to get the help you needed to carry it out.

One reason for research gaps relates to the problem of educational manpower development. You are acquainted with the difficulties we have producing leaders with academic respectability: that is, leaders with master's and doctor's degrees. We need these people who can assume positions of leadership in our post-secondary institutions.

I do not think that we are going to be able to change the demand for people with this sort of respectability. What we have to do is to find a way of producing these people, so that we will have the leadership we need. If we are going to achieve this, we certainly need research which will point-out the characteristics that we like so well about people who have had actual employment experience. Further, we need to determine what situations, other than normal work experience, can provide the same types of characteristics.

What I am saying is that we need research in many other areas besides curriculum, itself. As we solve some of these other questions, we will find new directions for meeting some of the changes needed in curriculum.

One of the obstacles to innovation is the people at the top -- in control of change. Only as these people adopt a philosophy in keeping with innovation will we be able to make the essential changes.

Horizons

I would like to list a few horizons that I think are ahead of us. The horizons are unlimited for those engaged in occupational education at all educational levels -- now, and for some years to come.

One reason for this is our technological age which demands considerable quantities of supportive personnel for professional groups.

All you need to do is to look at the want-ads for the Los Angeles Times to learn what is required in the way of workers. Every time you note needs for an engineer, or any other professional, supportive personnel are also needed to work with them. The fact that employers are looking for more mature personnel fits in very closely with the idea of supportive personnel. These needs help explain why post-secondary programs are popular with employers.

Another horizon before us is the challenge to provide comprehensive programs at the post-secondary level.

Some of us have been very critical of the comprehensive high school in years gone by, because we said that, if you want to do a good job of occupational education, you must have a separate institution. We are still following this idea in a great many instances to-date; however, I believe it is possible to have outstanding comprehensive programs at the post-secondary level -- if we are willing to provide the leadership for it. If this program is ever to occur, it will come about from groups (such as in this institute) who will lead the leaders of your own institutions.

If you are going to lead the leaders, you will have to work closely helping those who do the actual teaching. For, no matter what institutional leaders may want, innovation will not be implemented unless the teachers are willing to participate in change.

This brings us to one of the contributing problems that we have in providing comprehensive programs: the matter of what to do with a teacher who's program is no longer needed, and should be eliminated or replaced. Part of the answer was intimated during our last institute session when the use of part-time personnel was mentioned.

By and large, industry and other institutions are willing to share people; professional people are willing to take time to help with teaching. You can find many illustrations of this practice. In an article published several years ago, David Sarnoff related what he felt that many of his people should be doing to help in occupational educations in the schools. He emphasized this matter of sharing time and providing services.

There is no question about the possibility for having comprehensive programs. It is simply a matter of having the leadership and the willingness to move in this direction -- and support it fully.

The matter of achieving status for occupational programs is extremely bright at the post-secondary level. I hope that all of us recognize this as we think about what we may do to develop and improve curriculums which will provide people and programs with status.

Another horizon, which may become one of our largest in the next few years, is that of programs for updating and upgrading employed people. This will not be confined to trade and industrial, agriculture, office occupations -- or any single field. Some of you already have higher enrollments in part-time programs than you have in full-time preparatory programs.

The final horizon, and a very important one, is the opportunity to aid in the solution of national problems.

As I read, there seems to be more and more need for vocational education to relate its efforts toward national problems. We were told this in Washington several years ago -- that, unless we concerned ourselves with national problems, funds would be cut and other agencies for help would be sought. We have already seen other agencies assuming occupational education functions.

It seems to me that there is a movement back toward education by the educational agencies. To promote this movement further and maintain this direction, we must move positively into the arena of national problems.

I am certain that you are aware of most of these national problems. We must be very concerned with so-called disadvantaged. We must find ways to avoid future hard-core unemployed, as well as, find ways to eliminate that which presently exists. We need to be concerned with urbanitis -- the problems we have in the big city -- and what needs to be done in the future relative to urban problems.

Planning Directions

I will take a little time now to talk about some of the steps or processes that are important in the planning, development and operation of programs. Here, I am more concerned that you get a general picture, than concentrate upon details.

One of the first things we need to do as we think about occupational education at any level is to determine the manpower demands. State-wide planning is extremely important. I will cite an illustration because I think we need to fill the gaps.

A few years ago when data processing broke into the limelight, the people at Milwaukee Institute of Technology became interested in the possibility of educating programmers in two-year programs. They made a survey of employers in the Milwaukee area to see what sort of acceptance the idea would receive. About eighty percent of the people visited said, "We can't use your graduates. We need at least a baccaleaurate degree person. We would really like to have them to have a master's degree -- if possible, we will take a doctorate in the field."

Even though most people said they wouldn't use the product, the people in the institute launched the two-year program. Since inaugurating the program, they have had very few graduates -- because industry has picked-up their students before they could graduate. If the institute had listened to what the industry people said, their program would have never begun.

I think that we need to look into some of the other occupational areas, in particular, the health field. This field is very touchy because there is so much professionalitis involved.

The Dental Association of Pennsylvania is currently making a survey to determine how they can use people with less preparation than normal dentists receive. We believe that this approach must be used in a number of fields. We need to discover and fill the gaps.

The following occupational areas appear to have gaps, as far as occupational education is concerned: the electro-mechanical field, health occupations (bio-medical, etc.), computerized drafting, numerical control, agriculture (equipment technology, food processing, turf management, horticulture, forestry), oceanography, service occupations (over 10 million people are employed in local, state and federal government, today), park management, mortuary science, veterinarian assistant, aviation industry. These are a few -- much time could be spent enumerating others.

Conclusion

In closing, I would like to say that our challenge has been given to us in the following two brief statements.

The first challenge was issued in Washington during 1965 when Keppel was Commissioner of Education. The following remarks were made during a Division of Vocational Education staff meeting.

> We are a point of shift. We need to have more ideas than anyone else. Committees will look to 1970, rather than 1950. General movement toward higher standards. Programmed instruction may become one promising potential. Team teaching for specialization. Merit pay through different job assignments and job descriptions.

The final statement of the challenge is where you get your auxiliary personnel. At a meeting on auxiliary personnel in New York in November a remark was made that, if we would really use auxiliary personnel as we should, we could get master teachers' salaries in all fields up to $25,000. We have not even divided our own occupation in terms of preparation and use.

Finally, I would like to call your attention to the words of Stanley M. Elam in the Phi Delta Kappan, where he said: "Initiate, renovate and innovate, gentlemen, and damn the torpedoes." We are convinced that inertia is still more dangerous than faddism. I know that you folks in education are the kind who will initiate, innovate, and will implement.

VOCATIONAL EDUCATION MODELS

Dr. George F. Outland, Director
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I would suggest that we should concentrate on certain elements in innovation in education here today. I think we know what needs to be done -- most of the professional conventions you attend spend a great deal of time preaching to you on what needs to be done. We do need to gather some evidence on why, but for now, we will pass on this.

The second thing we might want to explore is how can it be accomplish? Dr. Patrick, this morning, gave you some means to do this -- how you can accomplish innovation; how you can buy-off time for teachers. I would like to spend some time on how it should be accomplished, and how has it been accomplished.

Management of Change

My responsibility in the San Mateo High School District is the management of innovation. Dr. Patrick has said that change is the only sure thing of life, and of curriculum. We are going to be having change. I am aware of the conservative's idea that change is not necessarily progress; we want to have progress with our change. So, how do you manage innovation? How do you in your roles as state directors, coordinators and supervisors accomplish these kinds of change?

Let's look at the elements for a moment. I would suggest that in the management of innovation you, essentially, need four things going for you -- if any one of the four is missing, you have problems.

Students Needed.

The first one (but not necessarily the first sequentially) is that you have to have students. This should be self-evident. I can identify one California school district where they set up a program in custodial training -- excellent jobs, good pay, tremendous demand -- nobody signed up! So, you have to get some students.

How do you find out if students want to participate in your program? The interest survey is one way. The Boy Scouts ran our survey for us. The form used was adopted from the Explorer Scout Interview Form used for setting up Explorer Posts according to occupational interest. Here are the results of the survey in our school district.

Assume that one-third of the students will actually sign-up for a course (which is a good rule of thumb). Looking at advertising, and using the one-third rule, we found that we wouldn't have enough potential students on any one campus. We have seventy-two students who identify an interest in advertising -- probably one-third of those would take the program if we had it. Now we have to solve this problem because it is our responsibility to supply the kinds of programs these students are interested in. We will show you how to do this in just a moment.

Another device we can use is the follow-up study. Where have students gone to work in the past. We are concerned with all students who do not get a bachelor's degree.

About two-thirds of our students who did not go on to higher education went into junior college. One-half of the students who went to work directly from high school went into the clerical occupations. This data gives us some guidelines in planning for innovation and telling us where we should place the emphasis -- we have to put about half our emphasis upon the clerical occupations because this is where our young people are taking jobs.

In order to get students for vocational education, you will need some recruiting techniques. As experienced vocational educators you already know most of these, so I will not take time on this point now. Certainly, Mr. Stephen's Introduction to Occupations program is a good place at which to start.

Teachers Needed.

The second element you must have for a vocational program is teachers. We have problems on credentialing. What can you do? You may train the teachers yourself, or you can get a part-time teacher, or you can contract-out for teachers.

We have a program in aeronautics education in which the lab course is taught by a college instructor. We contract with his school's business manager agreeing to pay for one-third of his salary, since that is the portion of his time we use -- plus mileage for the teacher. This is the way we got our aeronautics program going. Actually, it is a four year program (grades eleven, twelve, thirteen, fourteen) -- the same instructor works in different labs. You can actually go out and hire your own teacher, if necessary.

In this concept of part-time teacher, we use teaching assistants. Our average teacher's salary in this district is over $12,000 this year. Our per class rate is roughly $2,000, or almost $11 per hour.

We have a teaching assistant who we hire for approximately two and a half dollars an hour. She is a housewife with a bachelor's degree and experience in quantity-foods cooking. The teacher responsible for the FEAST program in the school says that, if we lost that woman, she would quite the program -- that's how effective this para-professional has been. She only works three hours a day; she has a family and doesn't want to be in school full time.

We use the cafeteria managers to run the foods program. The students are put-out during the second semester into four elementary schools and two high schools, and the cafeteria manager teaches them how to mass-prepare food. Cafeteria managers cost us around three dollars and a half an hour.

So, you have many different ways to overcome this problem of getting teachers; but you have to have a teacher who is willing to innovate. Our strategy is that when you get a teacher with a good idea, back him to the hilt. Let him carry the load. You provide him the support services. Remember what Dr. Patrick said this morning -- your job isn't to supervise, your job is to lead. I think your key role in leadership is to find those one, two, five or ten teachers who really think they could do a better job; then help them do so. Because they are right -- they can do a better job!

Facilities Needed

The third element that you need is facilities: school facilities on campus or shared facilities with other schools.

Larry Edler has a program for the trainable mentally retarded in Santa Cruz County, but he doesn't have enough students so he shares this job with Monterey and San Benito counties. As a matter of fact, people in the special needs programs have been sharing facilities for a long time.

We in vocational education tend to say, "This is my campus -- that is yours." This is ridiculous. Why shouldn't a junior college student take a program at a high school site? I can cite, also, a regional center in California that is half full and located right across the street is a junior college which is also half full.

You can go outside of school and use work experience education. Some of you people from small towns may have a student who wishes to become a service station attendant. You haven't the staff, nor the money to set up the program; so, why don't you go down to your neighborhood Standard Station and work-out a work experience program with them? That is vocational education, too.

Jobs Needed.

The fourth element is that you have to have jobs. In vocational education this is the key requirement.

In any innovation, you have to have these four elements: students, teachers, facilities and the support elements. You have to have the backing of the parents. This latter takes a little time. Some times, you do it through your counseling staff.

Support Needed.

You have to have community support. This is one of the advisory services which Mr. Knoebel talked about a moment ago. These may, or may not, be parents of students in your program. You have to get out, find out where the resources are, and make use of them. Our advisory services are used in helping to select equipment, prepare performance objectives for the job and determining if the curriculum matches the performance objectives. We keep our advisory people away from such things as the evaluation of teaching staff; on the other hand, they may assist in locating new teaching personnel.

You also need administrative support. December 18, 1963, administrative support suddently increased across the nation -- that was the day President Johnson signed the '63 Act. On September 15, 1964, it increased even more -- that was the day Congress put money in to the '63 Act. Nevertheless, you must have administrative support even though it may be nothing more than giving you permission to try some things.

A Frame of Reference

This week, as you explore how some innovation has been done, I ask you to do two things: 1. determine how the programs were developed (can you accomplish the same thing) and 2. determine how the effectiveness of the programs can be evaluated? This is the challenge we give you today.

Let us now go back and discuss at greater length how these tasks may be accomplished.

I would like to talk about both a philosophy of education and an organization which will accomplish this. The philosophy is called a Zero-Reject Tradition.

Zero-Reject Philosophy.

With the state of the art of education today, it is possible to get any student through high school. We do not do it systematically. The zero-reject philosophy has been adapted from the Department of Defense zero-defect clause. This is our goal. We have not reached it today in our total program. We have reached it in one program in one school of our district. In the reading program at Capuchino High School, we can get every youngster up to the grade-norm in reading. (We had 85 percent the first semester of the program, 97 percent the second semester and 99.5 percent the fourth semester.) This zero-reject concept is a goal toward which we must shoot.

A Comprehensive District.

How do we go about the job? We have what we call a comprehensive district. We believe that a totally comprehensive school, which can meet the total range of needs of students which should be met, is not possible today.

The typical comprehensive school can be shown, in an administrative package, something like this: it is a regular day-program -- the 2x4x6 system (two covers of a book, four walls of a classroom, six periods a day

-- make it fit, or throw him out). This is the considerable-reject system which we cannot tolerate any longer for two reasons: 1. our conscience won't let us, and 2. if we do not do the job someone else will. You have already seen the inroads made by outside programs such as Job Corps, OEO and many others.

Even within the limits of the 2x4x6 program, even within the limits of the six period day and the sixty minute block, there are a number of things we can do to solve some of our problems. Let me refer to our district again.

In San Mateo we have seven high schools and one more being built. Within this 2x4x6 system, we have what we call multi- and dual-eligibility. For example, at the northern two campuses (Crestmore and Capuchino) we run a bus back and forth every day. Capuchino High School has the food service program (FEAST). Students from Crestmore come down for that program; also, students from Mills High School and one student from San Mateo High (he provides his own transportation).

Frankly, transportation is a limiting factor. If you provide transportation, recruitment is more effective than if you expect the student to provide it. On the other hand, it is better to have as many schools represented, as possible; you get a much broader feed-out and counseling problems tend to be overcome.

We use this system for other programs. Crestmore High School has a program in industrial arts called, Words and Numbers. This is an inter-disciplinary ninth and tenth grade program for students who are in the bottom quarter of the district in math and language skills. The program is funded under ESEA, Title I.

If you have a good idea and a way to help kids, you are not hurting for money. Money is not our key problem! We are hurting for time. We are hurting for ideas. We are hurting for innovaters. But if you have a good idea, I can guarantee that I can find you the money for it. Our district operates under nineteen federal programs.

Multiple Eligibility Concept.

The multiple-eligibility concept, may apply to any field. Here are a whole series of programs which we have in San Mateo high schools.

At Burlingame, we have advanced foreign languages. We have orchestra on one campus -- band on another. We have excellent old Smith-Hughes shops used for industrial arts now, but eventually, will be used for some vocational programs. We have English for foreign-speaking students at Burlingame. We have a district-wide hard of hearing program at the same site.

We bus students every hour during the morning -- about ten percent of the students are exchanged between the two sites. (This idea is similar to the situation at this Santa Cruz institute: you slept at Stevenson College, you had breakfast at Cowell College and now you are working at Crown College.) These are simply colleges of a university -- they are parts of the same school district. They do not even have to be that -- San Mateo also shares across district lines.

What if the distance were twenty miles, or fifty miles? Then, why not have a program one day a week, an evening program or a Saturday program? Los Angeles has a Saturday industrial arts program for students who cannot fit it in their schedules any other place. You do not have to stay with your 2x4x6 program.

Mills High School has our district-wide program for the educable mentally retarded. It has an electronics program.

Aragon has the aeronautics program (which is tied-up with the College of San Mateo) and the auto-services program.

San Mateo is starting a new program in para-medical training which involves students from Aragon, Burlingame and Crestmore. This site also has an evening homework tutor center. (Students from all seven district high schools and two private high schools come here for assistance in tutoring. The largest single tutoring class is in typing.)

The moral of the story is this: you can combine sites -- including work-experience.

Our long range plans include the following types of operations. The ornamental horticulture program will grow into a recreational occupations center at one school. Capuchino High School will house our food services program and para-vocational, or avocational, performing arts center. Mills High School will specialize in electronics, and probably, our government services program (pre-training for fire-service, police-science and government work -- tied in with the College of San Mateo). At Burlingame High we will have the student services curriculum for students who will be entering the social sciences (people who will become medical, psychiatric and welfare aides). San Mateo High will include the communications occupations (radio, TV, printing and drafting-design). Aragon will have the transportation occupations center -- materials handling, aerospace, and auto service. Hillsdale will provide advanced office occupations -- data processing, medical secretaries, etc. Marina High School will become the marine sciences center.

Articulated Programs

Let us look at some other kinds of programs. The articulated program is exemplified by the tie-up between the College of San Mateo and Aragon High School in aeronautics. It takes a certain amount of time and effort to make this articulation work, but it can be done. The extended-day and extended-year programs: we have an adult school at San Mateo, as well as an aided-study program, which enrolls about 60 adults who are finishing up their regular high school program. Berkeley High School across the bay, has programs in welding and painting taught from one to four o'clock in the afternoon -- half the students are enrolled in the adult program, half are seniors from the high school.

Contract Program

The fourth element of the comprehensive district is the continuation high school. The key element of this idea is contract education. Contract education simply says that what we will talk about is what the student will do, not the time he will serve. A classic example of how this works is, as follows.

At Hillsdale High School we have a teacher who decided to go into television typing. She doubled the class size. She also decided to put these people on performance objectives. In carrying out the program she doubled the class size and doubled the performance. The kids knew what they were doing -- they had a contract with the teacher which said, "I shall typewrite at the speed at which I handwrite." When you get the student involved, learning is accomplished more efficiently.

Work-Experience Education

The fifth element that we use in the comprehensive district is work-experience education. We use it in two ways: the so-called cooperative (paid) program and the exploratory program (six-weeks on-site, unpaid).

Community Services

The sixth element is the community services which involves getting the students out in the field as volunteers to explore the real world. Not only does this help increase students' awareness of real world requirements and work responsibility, but also it brings people from the community into the schools. There are some 33,000 occupations listed in the DOT today. No one can know about them all, but there is someone in your community who knows very much about one -- he is working at it today.

Planning for Change

At the educational resources center (the Know and Care Center), we are doing four things. We are setting up systems for: 1. getting and using resources in and out of the schools, 2. quality assurance, 3. finding out the strengths of an individual (Human Potentials Laboratory), and 4. program development.

The key to program development is to be thorough in what you do. It doesn't take a genius to do the job; it takes someone who is competent in doing everything that needs to be done, and who will do the job well.

I think that it is time we talked about the management of innovation a little more. We have given you the structure of a comprehensive district. We have shown you how it has been working; not how it should work, but how it has worked.

The planning system is something you have all done. It doesn't take a genius to figure out; it is simply a matter of thoroughness. Let me illustrate this idea of thoroughness with an analogy.

Do you know how you get up in the morning? Nothing to it? Let's see what happens.

If you remembered to set the alarm the night before, you turn off the alarm when it goes off.

You groan.

You shake your wife -- assuming you are married; groan again; shake your wife again; and finally crawl out of bed.

Arising, the first thing you ascertain is: is it dark outside.

If the answer is no, proceed to the next step -- check the temperature.

If the answer is yes, turn on the light, then check the temperature.

If the temperature is below 70 degrees, you recheck to see if it is below 30 degrees.

If the answer is no, you continue on to the next stage -- pre-breakfast chores.

If the answer is yes, you turn on the heat, and climb back in bed until the house warms up -- then do your pre-breakfast chores.

Proceeding on -- you brush your teeth, take-off your pajamas, dress and have breakfast.

Next, determine if the wife needs money.

If the answer is no, you go to the next step -- biding her good-bye.

If the answer is yes, you grumble and give her ten dollars -- maybe.

The next question is: have you been married over five years?

If the answer is yes, you proceed out to your car.

If the answer is no, you kiss your wife -- then proceed to the car; or, if you have been married less than a year, you kiss your wife again before going to the car (and you resolve to set the alarm an hour earlier next time).

You walk out to the car, drive off and check if you have your lesson plans (assuming you are a teacher).

If the answer is yes, you go on to school.

If the answer is no, you go back and get them; then, go to school.

This is how we get up in the morning and go to work; but if you ask the average person to lay out the plan for the preceding it would go something like this: you get up -- you get ready -- you go. This is what I mean by oversimplification. What I want to point-out is that you need to be particularily thorough in planning for innovation. While getting out of bed and going to work are no innovations to us, this illustrates a way to plan innovation.

Let me show you a planning system which was developed for us by a professional consulting firm -- for $30,000. This system covers the periods from February 1968 to January 1969. It is an educational plan for laying out a new high school which included three pages of detailed planning. But such planning is of no value if you do not use it.

A Pert System

Let us talk for a few minutes about how you would PERT a system. This is simply a schedule of how we would bring about innovation in one school district.

1. In March, get cabinet approval to explore a new idea. This is a courtesy procedure toward the cabinet (superintendent and his immediate administrative staff). Typically, they will record the idea in their notes to the board of trustees. When we started the para-medical program in the Fall of 1968, we suggested the idea in March 1967.

   This procedure keeps you from being embarassed by the teacher or student who says to a board member, "How about the new program?" The board member says, "What new program?" And when the board member says, "What new program." you don't have a new program. He had better know about it fairly early.

2. Review the idea with state personnel. The state regional staffs have been very helpful in California. They have seen many programs and can help to point out risks, areas of strength and new approaches to try out.

3. Involve the county coordinating committee. This committee in our area is composed of the vocational coordinators of the College of San Mateo, the high school districts in our area, OICW (Occupational Industrial Center -- West) and people from the county schools office.

   Our job is simply to sit down with them and say, "Look, we are exploring a curriculum for next year. What are you fellows doing?"

   Sequoia District, just south of us, is also going into para-medical programs. So we asked them if they wanted to set up a joint advisory committee. In this particular instance, differing service areas made a joint venture impractical. In any case, keep your people informed.

I suggest that we in vocational education do not have time to waste on "territorialists". There is too much to be done, and too few people to do it. Get going on a part of the job. If somebody else gets into your area, let him do it, you have other things to work on.

4. During the summer time we do some organizing and planning on the ideas.

5. About September, we recommend that you organize your advisory committee. This is your occupational advisory committee made up of labor, management and government personnel in the field -- whoever has jurisdiction over the working area. These people have two major responsibilities to indicate what the requirements are: 1. for entry into that occupation, 2. to assist in the tentative selection of the teacher (if one has not alredy been identified).

6. By October, a draft of the program is begun. This is simply a general course outline. Is it a one or two year program: one, two, three, or four hours per day? What do you plan to get the student to do? Where does he go from here? What kind of equipment will you need (take this question back to your advisory committee)?

7. About November, we get this program reviewed. The review process takes a considerable time. The major purpose of the review is to assure that the program is a good project -- pre-evaluation, for cost-effectiveness.

8. After passing the review along in January, we start recruiting students. We have our instructor. We have identified facilities somewhere during the draft process. We have identified the jobs and support services. Now we have to have students.

9. In March, we obtain the approval of the board of trustees and proceed with the project. We can then write a VEA application -- all our vocational programs are reported on a single application form.

10. In April, we submit the project to the state. Typically, it is about June before we get back a letter of approval on the project. (We do have a reallocation period in November -- three-fourths of the funds are allocated in April, the remaining one-fourth in November.)

11. In July, we start our in-service program. This is the beginning of efforts to round out the program draft. Development is started on learning activity packages, sequences, hierarchies -- lets find out what and how the program will be taught.

12. In September, we have the class.

There are some things which are missing in the preceeding. Along about December we start getting the specifications for equipment, special facility needs, field trips, etc. About March, we get equipment bids in preparation for the July 1 purchasing date. By August, equipment is (hopefully) installed.

This has been an example of the PERT system in our district. This year we had 106 applications in our district for innovations. These ranged in cost from $600 to $500,000. We have had to arrange for some ways to screen all the potential ideas and get them into the school system. So the review procedure comes into play at this point.

I have illustrated, above, what has been done in our district to get the job done. Your school may use others.

Innovation Project Review

I would now like to elaborate on the curriculum review systems which we use.

The Administrative Cabinet gives a basic interpretation of what the board wants: the policy. For example, this year when we had 106 project applications, the board instructed us to focus attention on basic and general education and attempt to individualize instruction as much as possible.

The Director of Educational Resources position is a research and development job. One element of this job is to write projects for federal funding.

The program planning and development group of the Educational Resource Center has one responsibility, only, and that is the management of innovation. These are the people who, no matter what the teacher wants, seek ways to support these wants. Our role is to act as the advocate of the teacher against the system. The superintendent sits-in as a member of the planning-development group, but he is just one of the troops. He takes off his representative-of-the-board hat and assumes the role of innovator.

We have a unique group called the Curriculum Council. We do not have subject matter supervisors on the district staff. We have, instead, the department chairmen from each high school who meet together in curriculum councils of their areas. There are thirteen curriculum councils, plus a nurses' council and vice-principals' council. They meet every month to review courses of study, set equipment lists, seek funding, etc. Their major responsibility is to improve the instruction in the district. (They are not an hours and wages negotiating committee.) It is the council which first reviews a teacher's proposal. The councils elect one person to the District Academy of Instruction.

The Academy is composed of the thirteen Curriculum Council representatives, three representatives from each school (elected at-large) and the superintendent (in the role of a teacher). In October, the academy strengthens the various proposals making them as good as possible; and in November, they send them to the Curriculum Council which ranks each proposal as a first, second or third priority.

A sub-committee of the academy then takes the proposals (both continuing and new proposals) and ranks them in A, B, or C categories. A means that we must have this; B means that if we have the money we should try it; and C projects should, probably, not be implemented right now. (We have three options,right now, because our board puts aside approximately one percent of our gross budget, annually, for innovation. These funds are matched, whenever possible, with state and federal funding.)

The next reviewing agency is the Instruction Council which is comprised of the eight high school principals and the assistant superintendent for instruction. They, also, rank the projects: A, B or C. Each A project is then given a priority ranking, from one, continuing through the total number of projects in the category. B projects are similarity ranked. The recommendations of the Instruction Council are taken to the Cabinet and superintendent in December and January.

The superintendent makes his recommendations to the board in February.

The board then takes the recommendations to the academy, the instructional council and the suggestions of the superintendent, and establishes a final priorities list.

It is the job of the Know and Care Center, then, to obtain funds to carry out as many projects as possible.

This, then, is how our district manages innovation.

Quality Assurance

Following the review procedures we have, what we call, quality assurance. (This task of the Know and Care Center was mentioned earlier.) The major concern of quality assurance is to determine what we can guarantee in education.

The quality assurance program is based on the concept that we should know where we are going and how we will get there. The first thing we need is performance goals. These say what a student should be able to do when he comes out of a program. Then the students can know what they are in the course for. Then, get some learning packages.

In setting up your quality assurance program, in working with your teachers, get them to define, expressly, what they want the student to do. If teachers use words like: know, learn, understand and appreciate, ask them the questions: "How do you know when a student has understood? What does the student do? How has his behavior changed?"

We talked, this morning, about hierarchies in the structure of learning. Following is an idea extracted from Bloom's Taxonomy. We need to order performance objectives in a hierarchy of levels. Vocational programs should be structured to include at least the first three levels: knowledge, comprehension and application. The levels four through six (analysis, synthesis and evaluation) may not be as readily achieved through vocational programs. At Berkeley, we teach our people to use Bloom's first three levels and they succeed quite well.

Once you know what you want the student to do; then, you can find out what he can already do. You may even find a student who can challenge a particular course. In one school district, if a student can pass the course by challenge (if he can pass the performance evaluation system), he gets credit for the course and goes on to the next step.

Next, we employ alternative strategies in performance development. We have computer assisted instruction, I.T.V., programmed instruction, group training, individual training, etc. Now we can systematically begin to find out which methods work best for development in the various real school situations. We will make mistakes; but by keeping an inventory (as Dr. Patrick mentioned earlier), we will learn which ones will work.

How do we assess performances at the end of a program? Testing?

Testing is only one device. The test assesses only a small sample of a program.

What about professional observation by the instructor? He knows about his occupation. Maybe that's one of the reasons we like the man who comes out of the trade -- he knows what is expected by the trade.

Why don't you ask the student what he has learned? Ask him! Someday we are going to sit down and ask a youngster, "What would you like to learn in this occupation" -- instead of giving all these preference tests.

Cost-Benefits

Once we find out where we want to go, and plan alternative strategies for getting there -- and these are limitless; let's find out which is the best way to go.

It was a cost-benefit for us to contract for the services of the community college aeronautics instructor rather than to train and hire one of our own. The same principle applies in work-experience programs -- find out what the costs are.

Take a brief simple look at the relative cost of each of your training programs. Assume that you have to do the training. Take as an example of relative costs the following: our district spends over $1000 per child per year; Job Corps spends $6500; San Quenton spends $2000. Now, is our rate expensive? If we don't do the job, someone else will have to.

The question really is: "Within our $1000 a year, what is the best way of doing the job: in school, in advanced placement at a college, on-the-job with work experience?" Let's put a cost figure on it, because the more we save in one area of training, the more money we will have to train someone else. Those are our options. We have to set priorities on what we do, and get the most for our money.

Realize, of course, that we have the option of acceptance. You do not have to use the cheapest system: but let's know why we are using a particular system.

In order to determine cost-benefits more adequately, we are getting some benchmark data: comparing follow-up studies to determine how far the newer groups have progressed; checking out the dropouts; assessing the college entrants and completions. We are determined to discover the cost-benefits.

Concluding Thoughts

In closing, let me give you two main thoughts.

The first is: be cogitating -- because this will make you a great man (or woman) when you return home.

The second is provided through the sad story that Seymour Wolfbein likes to tell about Mark Heller. It seems that during a pause in a speech which Heller was making a voice came out from the audience, and said, "Heller, you're stupid." Heller ignored it. During the next pause, the voice more loudly, proclaimed, "Heller, you're stupid!" At the next pause, Heller was prepared. When the voice said, "Heller, you're stupid." he replied: "Yes! And you're drunk!" To which the voice replied, "That's all right. Tomorrow I'll be sober and you'll still be stupid!"

The moral of the story is very simple. We in vocational education are not stupid. We are uninformed on a number of things -- things like Bloom, Mager and systems for managing and creating innovation -- things that we need to adopt.

My final word to you is a warning. Don't do things our way -- do them in the way which works best for you. But let's do it!

RECAPTURING DROPOUTS BY RESTRUCTURING LEARNING SITUATIONS

Mr. Charles F. Nichols, Principal-Director
Work Opportunity Center, Minneapolis

A Set-up for Dropouts.

I want to talk about a program for students who have dropped out of school. We are concerned about these people because we see dropouts as failures on the part of administrators, and the school system. Let me use an analogy to demonstrate what we, typically, do with boys and girls to encourage dropping-out of school.

Let's say that we are going to make the student into a bricklayer. We tell the student all of the things that a bricklayer can do, and what a good future the occupation offers. Then we say that the top of building "x" needs repairing -- when you complete that, that will be your diploma.

The student puts the scaffold on the top of the building, and we tell him: "You have now completed the first phase of your education."

Then, when he has arranged the block-and-tackle, put a barrel on the scaffold and filled it with bricks, we say: "You have now completed your elementary education." He is successful in these initial activities -- for some reason, or other, these experiences came through to him in elementary education.

Secondary education starts when he goes down to untie the rope holding the barrel. Of course, the barrel is now heavier than he is (just like secondary education which may be just a little too heavy for the student), and he goes up and the barrel goes down. On the way down, the barrel hits him on the shoulder and produces a traumatic experience. But we educators tell him to hold on -- things will get better.

So, he holds on and hits the tackle up at the top (which is the impact of junior high school), and learns another painful experience. But we again tell him to hold on -- because things will get better.

About that time, the barrel hits the ground, and the bottom falls out of the barrel: dumping the bricks. The learner is now heavier than the barrel -- and he is now ready for another stage of secondary education. The barrel starts up. He starts down. They meet again in the middle, and he has another painful experience. Finally, the barrel bangs into the tackle at the top as he lands on the bricks at the bottom.

We then say to him, "That's the knocks you get in education."

He replies, "The heck with it;" and lets go of the rope. Now the barrel is heavier than the rope and it falls -- hitting him on the head. And he leaves!

This is what our kids do, too. We have them going up and down in Education. We keep giving them bangs and knocks until, finally, they say -- forget it -- and get out. If we had given them a longer rope, or a different approach to the problem, we might have forestalled the serious ups and downs and kept them in education.

A real example of the type of thing which I have just alluded to is found in our suspension and truancy systems. Here, we go out after our truant and after great expenditure of time and money, find him. Then, we suspend them. Why don't we just leave them as they were? So, we legalize truancy through suspension of the students who can least afford to be out of school.

Then too, we have the wonderful device called expulsion which is handled by the board of education. Here, we formally and legally exclude a person from learning. By doing this, we say to the student that we will not have you in school. You are not entitled to free public education. Now, go out and earn a living in a society which calls for skills.

In Minneapolis, we have an average dropout rate of sixteen percent, with a high of thirty percent in some schools. As I understand it, this average rate is a nation-wide low. Yet, we still have sixteen out of each hundred students who do not get a high school diploma in an age which demands some sort of certificate.

So, this is the state of the art. We have the vicious circle of suspension and dropout. We put kids into mass, one-dimensional programs. We don't let them out. We don't let them in -- into anything which can help them. We won't change the program. We give them the barrel-course and wonder why they dropout. We do not take students as they are -- and work with them.

Can you imagine a doctor telling a patient with a broken arm: "Look here! You were here last year with a broken arm. If that is all you are going to do, I'm not going to bother with you, because it does no good for me to fix them." He wouldn't be in practice long.

Another instance might be the case of the woman who came to the doctor during her second pregnancy. The doctor says: "Again! I won't have anything to do with you -- get out!"

These examples are ridiculous in their context, but this is what we are doing to some of our children in education. We don't take them as they are. We don't make changes in our system to accommodate these kids. We had better start!

A Philosophic Basis

A basic truism that we must accept in education is that you need the body in order to educate it. Kids are going to learn either in school, or in the streets. What they learn in the streets is not necessarily, what will be appropriate for survival in this day and age.

Our basic problem is to do something with these youngsters with special needs. As far as I am concerned, administratively and philosophically, anything that we can imagine that we can do in education, we can do. The process might need more time, more money or more study, but it can be done! We can construct a school system that excludes no one at any time, and can carry them all through the system.

Our problem is to design an educational facility that operates at the high school level, because this is where most of our youngsters start running into problems. This facility must provide educational opportunity for youth in the age range from 16 to 21 in the non-school setting, and be designed to meet their vocational-technical education needs. It must, also, be designed to meet the special educational needs of those who are not now succeeding in existing educational programs.

The boy or girl dropping out of school at age 16 is only a physical manifestation of something that happened three to five years earlier. So, we need programs designed to reach back to this earlier period.

We must accept each student as he is and determine, realistically, where he should go. Then take him, or her, as far along as possible: as quickly as possible. This idea of maximum development and progress can be illustrated on a simple line graph. On the graph, we equate time-distance with the accomplishment expected through a course of study. If the person is a 100 mile-per-hour student, he will reach the 100-mile mark by the end of the term. If he is a 60-miler, he won't finish. So, we tell the latter student: "You're a failure, and you will have to take it all over again." Had we extended the amount of time that the course would run, this student could have picked up the additional needed skills. He could have become productive.

Let's say that the above situation took place in Algebra. Even if the slower student took longer to get to the 100 mile mark, he could still reach the mark more efficiently on a continuous path.

For people who do not agree with the preceding idea, I must remind them that what they tell the kid is that he must go back before he can go forward. Why start all over again if you really only need to progress from 60 to the 100 mile points? This is what I mean when I say: take them along as quickly as possible, determine where most realistically they should go, then help them get there.

Guidance Services Needed.

We need also to provide these students with a tremendous amount of vocational guidance. Give them short-term skill training in work and work roles. Give them long-term work training. Assist them in getting work experience, because a lot of the people we are talking about have never had it. The work experience their parents had was a sort of parapathetic thing, where they simply moved from one spot to another. We need to provide them with on the job follow-up, and also, we need to always keep in mind that the high school diploma, or certificate, is something that is very important in our society. We need to provide them with high school opportunities leading to credit for graduation. If you are going to set up a program for these kids, you have to have that diploma hanging out there somewhere as the carrot -- because society demands it.

We have to prepare these students for their future work and help them to become as independent as possible, because they have gone through several generations of dependency. We can see this in our social welfare rolls where the same family continues to cycle through the rolls and involve an ever-enlarging number of agencies. We want students, through our program, to become as independent as possible; so we emphasize skill training and hold-out the carrot of the high school diploma.

Another thing that we haven't done in our previous educational policies for this type of individual is to let them be involved in the program planning. You can do this by working directly with the students and through the supportive services that you give him; but I wouldn't say to do this work with the parents. The parents just do not know -- they haven't had an opportunity to know.

Staffing Requisites.

You are going to need a special type of teacher and a special type of administrator for this sort of program. This gets us into an administrative philosophy where the administrator is not the super-teacher, but a facilitator -- a person who hires super-teachers and then gets out of their way so they can teach. He provides them with the things they need. He criticises, if criticism is needed, but all criticism should be constructive, or not given.

The teacher needs to be a professional educator with all that the term implies. Referring back to the doctor again we note that when faced with a problem he tries over and over to solve the problem; if this doesn't work, he tries that; if that doesn't work, he tries something else.

With dual certification, each of our teachers has an understanding of the world of work. Unfortunately, in some of our target area schools, we have teachers who were successful in high school, successful in college, and then, they went directly into teaching. They have never had the sight, and the sound, the smell, the feel of the world of work. I would say that this dual certification must include vocational certification and work experience.

We must also have full-time, twelve month teachers -- let's quit making teaching a part-time job.

Our teachers need a good base in counseling skills, because the individuals he will work with require these services during all school interactions. The teacher must provide acceptance and warmth. He should be helpful, eager, and above all, enthusiastic (those kids can spot a fake a thousand miles away).

This teacher has to be flexible. With this type of student, he must change from day to day. Making up elaborate schedules and programs is not going to work, because some of these students you will have for short periods of time, others for long periods. Further, the students' problems are cyclical in nature, and you must change the program to suit their needs of the moment.

This teacher must be able to absorb, and use, continuous in-service work. Teacher training must be going on all the time. This is not sensitivity training, but security training: where the teacher becomes more secure in his profession, in his skills.

The teacher training and faculty meetings should be sessions where you are continually polishing off the rough edges. A couple sessions a week would not be excessive. Again I refer you to the medical profession where up-grading is a continuing learning process. Unfortunately, you, myself and many teachers haven't been inside an academic classroom for the last 10 or 15 years; yet, we are teaching boys and girls living in the jet age.

This teacher should be able to effect attitudinal changes in people. This is very important because it is attitudes we need to change, as much as, we need to train for manipulative skills. He must be able to effect attitudinal changes not only in students, but also, in other staff members. There must be a continual give and take between the staff members in this particular type of a program.

Curriculum.

The program must be on a flexible or a modular schedule. Get away from the lock-step schedule: sixty minutes of this, five minutes here, a bell ringing followed by everyone rushing like mad for someplace. This lock-step system just won't work. I don't even think it works with regular-type students. This procedure is just outdated.

Get the kid into a technical area first, and then, get him into his related areas. Then, he can see the why of mathematics, of English and of social studies.

Course content must be broken down into small units that provide flexibility and make use of the success-factor for learning reinforcement. The curriculum must involve continuous use of success factors, continuing revision and short blocks of time.

You may be familiar with the study at Stanford on learning which found that the learning curve was highest during that period when a teacher was taking roll, reading announcements and preparing to start the class. By the time when the teacher is ready to start a demonstration, or class instruction, the curve has started its rapid decrease. It was found, further, that if the demonstration, or instruction, was given at the beginning of the class, and then the instructor got out of the way, that the learning curve continued to rise, rather than fall.

Based upon this concept, we break our periods into short chunks so that the teaching takes place while the learning curve is rising. When the high point is reached, the instructor transfers the learning functions to the student by providing individualized study and developmental activity.

Supportive Services.

We need to provide a tremendous amount of supportive services for the student: social workers, nursing services, medical help and physicals for those who need them.

At WOC we ran all students through physicals, and found one of the most disgraceful conditions in the public education, today. Ninety-eight percent of these kids had some sort of physical difficulty. Forty-three percent of these needed immediate treatment. Here, we had evidence that these students could not function adequately in a learning environment, yet, we had put them out of school. This practice just doesn't make sense!

School orientation for all entering students should give them the answers. Get them immediately involved in the program. In the typical school situation what happens to the student when he comes in? In my experience as an assistant principal at North High in Minneapolis, we found the following type of situation.

A new student would enter the office at 8:30 or 9 o'clock. Sooner, or later, the clerk would ask what he wants. When he said that he wanted to enroll, they sent him to the assistant principal.

While waiting for the assistant principal to finish dealing with the early-morning clientele, the student received an initial orientation -- by observation.

Then, when we finally got to him and asked for his report card, or transfer slip; of course, he didn't have one. So, we gave him a list of people to see: the nurse, the counselor, the attendance clerk, the social worker, and finally, the vice-principal for programming and scheduling.

He goes to the nurses office, and you know who is there at 9 o'clock in the morning. He bounces around like this, and finally, ends-up in the counselor's office -- where he sits at the end of a long line of students waiting for guidance and counseling (one counselor, 500 students).

When he finishes in counseling, he goes to the attendance clerk who is still busy taking care of tardinessess and that sort of thing. Eventually, and following the usual interminable phone call with the clerk at his last school, she hands him his admittance slip.

Finally, he gets to the assistant principal's office and we make out a schedule for him -- except, he wants woodwork, but the class is full so we give him auto mechanics. He doesn't like auto mechanics, but that is all that will fit his schedule. Then we send him on to class.

By now, it is noon and he is having miss-meal cramps. Someone says that it is too late for his class, anyway, so he should go to lunch. He sits down with six or seven hundred people he doesn't know, gobbles down lunch and goes back upstairs to the room on his schedule.

He enters the room and reports for class; but the teacher says, "I'm sorry, but you are in the wrong room. Today, we are on an auditorium schedule: first period is third, third is fourth, fourth is second, fifth is sixth" -- and so on.

The kid says, "The hell with it!" -- and walks out. Now he is a truant. Then, we start concentrating on him. We go and find him so we can kick him out.

Orienting a kid to a school situation could eliminate many problems. This is a professional responsibility we have. We have to follow-up everything we do with the student. Can you imagine a doctor treating a patient, then standing at the door and waving goodbye to him. No. They write-up everything they do and follow-up on it. In education we don't do anything. We should follow-up and find out what works -- what doesn't work, and why. What has succeeded; why did it succeed; and what made it unsuccessful if it failed. We have to be concerned with, not how many students we served, but how well we served those who came to us. It is more appropriate to serve 100 kids effectively than 1000 ineffectively.

Finding Dropouts.

Seek them from each age group: 15, 16 to 21. Get dropouts who have not found adequate jobs, not just dropouts who are coming out of the school. Get dropouts who have not adjusted to out of school life. There are many of these -- just look on your street-corners and you will see many of them. Get another group of students who I call dropouts, but are not normally called dropouts. This is the high school graduate who cannot find adequate employment, or who wishes to be up-graded in his present employment. You know this kid -- he is the one to whom the teacher said, "Look. If you sit down and you shut-up, I will give you a 'D' and you will get through." So on June 12th he is a high school senior, on June 13th he is a high school graduate, and on June 14th he is an unemployed bum. Get that kid and attract him to the mainstream of our school.

Get the high school kid who plans to leave school, and wants out, because he knows he cannot fit into the sterotype that everyone should graduate from high school when they are 17 or 18. Some of these kids are not ready for graduation from high school until they are 19 or 20. Somewhere, we have to fill that gap with part-time employment, with learning-type employment, work study programs and other types of experiences. This is comparatively easy to do with a little imagination and does not cost an awful lot of money. We need to get these high school students in special programs that are provided in our existing schools.

Look at the number of people who we have in high school locked into a 55 minute, or one hour program, six periods a day; and yet, you and I will not accept that same kind of situation. When we sign-up with college and university programs, we pick courses to best suit our time and desires. When I received information about this institute, it mentioned times to go swimming and for other activities -- we never have done this for our high school students.

Skill Training.

Provide skill training. Let me mention some areas of concern because skill training is a very important thing. Even if it serves one function, don't put this experience into a dead-end training situation.

We no longer make button-hooks; let's quit training kids for button-hook manufacturing. Let's quit training them on equipment that is obsolete, even though it may have been donated to the school. I think that industry is doing a great disservice to the schools when they donate tremendous amounts of electronics equipment to a school when the gear is only appropriate to the donor's industry.

Get students into areas such as food service and food preparation (the largest industry in the United States). How many of our schools are training for the whole area of food service. Food service is like medicine; you can be anything from a bus-boy to a maitre' d in an exclusive hotel. Your salary range will be from a dollar an hour to thousands of dollars a week.

Get them in child-care -- something we are going to need more and more of in the future because parents are becoming working parents.

Develop co-op programs, and programs for nurses aides and orderlies. Don't keep the students in a sterile classroom, but put them out in the hospitals for training.

Provide homemaking skills. Too many of these dropouts did not come from an adequate home. Get them involved in homemaking skills.

Get them involved in areas that tie together: typing and business, tailoring and dry cleaning, photography and printing.

The preceding are all areas that we have tried.

Even though many of our courses parallel what is being done in some of our vocational schools, the types of kids I am concerned with cannot even get into the vocational schools; yet, they will profit from this type of training.

Management: we want these boys and girls to go out and become entrepeneurs in our society; yet, we do not give them any management training. These kids need to learn how to manage. If they are going to be a small-engine repairman, they need to know that business. The same goes for the dry cleaner, and many other areas. Put in this management as a related course. Tie your related work to the technical areas. They do not have to be separate things. Why not teach them concurrently, as in the manner of the Richmond Plan.

Special Services.

We need to have special services for these students which we do not have in conventional schools.

Out-reach, where we go out and get the student's.

Testing is essential, both psychological and vocational, after the counselor, teacher and social worker have prepared the individual for it. Testing must be seen by boys and girls as a tool which is useful to them.

We need to have individual and group counseling -- where a counselor has an opportunity to work with the individual.

Short-term skill training is a service. Here, some of the kids can get immediate training, get out onto a job almost immediately, and give a dollar's worth of service for a dollar's pay. When an employer finds this is possible, they feel they have a useful employee and treat them as such. When an employer gratuitously hires someone, you are not getting the type of employee-employer relationship that makes for a good situation. In the short-term skill training the student finds out very quickly that education and training pays-off. Then leave the school door open for them, and continually, entice them to come back on either part-time or full-time bases.

Get long-term specialized training. Some of these kids are 60 mile an hour kids for awhile, then suddently, they are 120 mile an hour kids. So you may have to provide a more sophisticated training over a longer period of time.

Developmental and related work (in reading, especially) is something these students need -- also in math, social studies and communication. These courses must be designed for individual student needs.

Why it is heresy in regular school to talk of designing a course-of-study for an individual student? I don't know? Nevertheless, it is. We are supposed to design something that can fit 30, 40 kids or 200. Why not make up one course for one kid? With computers, now we can work this out. With a small school, we can use strong-arm methods. With our types of kids we do not have to have large schools. We can have schools of three to four hundred, and make them pay.

We need job development experts. We have people who have the skills needed to go out and find, or design, jobs for these kids; place them; then follow them up while they are on the job.

Problems at WOC.

We have some places of concern. We have visitors. You put these kids on exhibit and they will walk out of the building. They are not guinea-pigs; they are human beings like everyone else and they want to be treated that way.

We have a problem with minority group students. The Negro, the Indian, the Spanish-American make-up a disproportionately high number of school dropouts. We are going to have to skew programs toward these groups.

We have a problem of students who gain the job entry-level skills, but not the attitudinal skills. They learn the manipulative skills rapidly -- then go right out on the job. As soon as they run into a problem with the foreman, or the boss, they talk back and get fired. Then, they are too proud to come back so they just stand in the streets.

We have the health problems which I mentioned earlier.

We have some 14 and 15-year-olds which I mentioned. These are the kids who are dropping out of schools.

We have public relations problems. We do not have P.T.A.'s, athletic events and such activities to focus public attention on our programs. Students are rolling so fast (some staying for five weeks, some for six months, some for a year) that we have neither the time nor inclination for the normal school public relations activities. Consequently, we need to go out and hustle-up our own public relations.

Public relations should be used to entice people to act as a pressure group to keep you sharp and moving.

Use your public relations to get other educators to duplicate what you are doing. Use it to get people to criticize you -- this keeps you sharp. When professional educators become afraid of criticism, then they are no longer professional educators.

Use public relations as a source of referral to get feed-back from the community as to what is needed, and you get information out as to what is available.

Use the public relations as a counseling device where you counsel not only with the student, but also with the community. The community needs counseling on this type of kid. They have a distorted image of what a dropout looks and acts like.

Use public relations as an identification process where you identify not only students but also community needs.

Use public relations as a source for finding on-the-job training positions for the boys and girls.

Use public relations as a place of obtaining special services. There are many things in our community that our schools could use to provide services for our students that we are not making use of.

Use public relations as a comparative research function where you can check what you are doing -- your relative success -- against what industry is doing, and their success. They have training programs, too. They may have developed a training technique that is better than yours -- don't be proud, copy it! Make more use of what someone else is doing, not less.

These are some of the things that I see in this experimental type of school. These are some of the things we have tried at the Work Opportunity Center. They are some of the things that you people can initiate in your school districts.

TRAINING THE UNEMPLOYED FOR DRAFTING-DESIGN OCCUPATIONS

George W. Elison, Dean of Technologies
Lehigh County Community College (Pa.)

It is a pleasure to join with you to discuss some of the problems of curriculum innovation. The task at hand is a lengthy one, so I will move directly to my assignment. My presentation will be in six parts:

1. A brief look at some of the problems involved in innovation.
2. Conditions leading to the development of the pilot project for training the unemployed.
3. A description of the pilot project.
4. A description of the tool design phase of the project.
5. Evaluation of the project.
6. Application of the results in continuing programs.

There are many factors involved in developing new programs, and I would like to briefly look at some of these. First of all, what is innovation? My dictionary defines innovation as changing something which is established. I believe many of the problems will become more clear to us if we modify this definition to, "changing the establishment". Education is an establishment with roots going back to our colonial days when the purposes of education were much different from those of today. Rote memorization of material was the end product of the schools with practical application of little importance. The trend toward a more practical system of education has been in progress for perhaps a century, but acceptance of the philosophy of a functional education is still not widely accepted. If you question this, look at the statistics concerning enrollments in vocational education.

If we accept the idea that education is an establishment, we will better understand that the educational system is, in many ways, as bureaucratic as other governmental agencies. Each sector of education tends to be continued and expended either due to a strong belief that it meets a major need of all individuals, or as a means of personal aggrandizement. I would hope that the former is more common as beliefs can be changed through education. Selfish personal interests are more difficult to cope with. Whichever the case may be, innovation means changing a bureaucracy.

Vocational teachers are, in many cases, ill-equipped to handle some of the problems of change, for they are first of all craftsmen, and secondarily, teachers. In most cases, their preparation fails to establish a sound knowledge of the history of education, and they are unable to understand why they receive opposition to change.

The question of "What brings about change?" might be simply answered by saying that someone recognizes a need for change and is willing to do something about it. Change with any meaning is not as simple as this for the originator of an idea has the responsibility of weighing all factors involved in the change to insure that the proper results will be obtained. Change for the sake of change has no value. It can, in fact, be a deterrent to well prepared innovative ideas. Once the originator of an idea has carefully checked out all possibilities, he must sell the idea to those in charge. This is often difficult.

Selling an idea requires some knowledge of the manner in which groups we work with, or serve, will view these changes. The biases and prejudices of educators have been mentioned previously. A great deal of consideration should be given to these for we are a small minority in the educational establishment.

Industry must be our partner in vocational-technical education and we must turn to them for assistance. It has been my observation that the members of the industrial team will react according to:

1. The degree of understanding they have of a proposal.
2. The background of the person with whom we are working.
3. The level in the business organization which the individual holds.

It is therefore imperative that we know the people in industry with whom we are working, and take these things into consideration in developing a program to keep them informed. I believe that we often make a mistake in vocational education by appointing advisory committee members who hold too high a position in their organization. Top management is often removed from the realities of production, and is often placed in a position where they are conscious of their shortcomings in dealing with the intellectuals of the community. Such men are prone to forget the practical problems of operation and encourage the development of the intellectual capacities of the individual at the sacrifice of technical preparation. The person faced with daily problems of production will take an entirely different view and say, "Give me a person who can do the job." So I would say to you, pick your representatives of industry wisely, learn their backgrounds and opinions, and develop appropriate informational programs before attempting major changes.

The reactions of parents and pupils are so closely related that we might consider these together. Social pressures for diplomas, degrees and similar recognition are so great that any change in the type of paper recognition which the student will receive will create many problems. Two personal experiences illustrate this.

Several years ago I helped develop a program of vocational education for children who were overage for grade. Problems found in these students covered a wide range. However, they all had a need to prepare for gainful employment in a short period of time for their chances of completing any high school program were slight. Regardless of their previous school experience, parents would not permit their children to enroll in this special program unless we could hold the door open to a high school diploma. As a result, we had to develop a compromise program ill-suited to their needs, and the program was a failure. Here is a case where parental pressures made it impossible for us to meet the needs of the students.

We find similar emphasis upon paper achievements at higher levels also. We developed a series of one-year certificate programs for the community college. These were designed around job requirements, and had been reviewed and approved by advisory committees. To date we have been unable to start any of these programs due to lack of enrollment. Students at the post high school level want the Associate Degree and are willing to sacrifice time and money to obtain it. Strangely enough, they will stay in the Associate Degree program and fail rather than transfer to a certificate program which they could handle.

So much for some of the problems of innovation and now on to the job of describing the Tool Design program for the unemployed.

The idea for this program for the unemployed came in 1961. At that time Pennsylvania was becoming deeply involved in retraining. Unemployment in the State exceeded that of any other state in the nation. In fact, unemployment rates in many parts of the state exceeded those experienced during the depression. State and community leaders were desperate for ideas of how to attract new industry to the state and stem the outward movement of people.

Success in retraining in Pennsylvania and West Virginia had set the stage for the Federal Retraining Acts and we knew such programs would be expanded greatly as soon as Federal legislation was passed. Programs in Pennsylvania had concentrated in preparing the unemployed for single skill occupations and we were in need of programs which would have a more lasting effect upon the labor force, such as those in technical fields.

The Pennsylvania State University, Department of Vocational Education became interested in this program, and after extensive study, developed a proposal to compare training for a broad field of employment with training for a highly specific field. The specific title for the project was, "Effects of Field and Job Oriented Training Programs on Manpower Utilization of the Unemployed." Mechanical Technology was selected as the field oriented program. Tool Design Technology was to be a job oriented program. The institutions selected to conduct these programs were a branch campus of the State University for the field oriented, and the Vocational Department of a large school district for the job oriented program.

For those of you who may become discouraged at innumerable delays in implementing projects, this project was conceived in 1961, started in 1965, and the results are just now being promulgated. You can expect delays such as this.

During the delay period, the two schools met with advisory committees and developed programs for their specific assignments. Many of the problems of acceptance, which I listed previously, did not concern us. With financial support coming from the Federal government, we were given a great deal of freedom by our superiors. This was probably more pronounced in the public school system for we were not concerned with curriculum commissions, department reviews and similar activities typical of a university.

In early 1965 the program became a reality, and 75 students of varying ages, education, and work experience were selected by the Pennsylvania State University, with the assistance of the Pennsylvania State Employment Service. Forty of these were assigned to the Altoona Campus of the Pennsylvania State University for the field oriented program, and 35 to the Allentown School District for the job oriented program. Dr. Bjorkquist of the Vocational Research Department of Penn State had the difficult job of working with many State and Federal agencies to get the program off the ground.

The Nature of the Program.

The title of the project as illustrated here was, "Effects of Job and Field Oriented Technical Training on Manpower Utilization of the Unemployed." The general differences in the structure of the two programs are shown on Transparency 1.

Transparency 2 shows the general requirements for admission to the program. Notice that these are modifications of MDTA requirements.

Transparency 3 gives a general comparison of the students enrolled in the two programs. It shows that differences, as measured by the GATB, were minor. There may have been differences such as the number from minority groups, ethnic backgrounds, etc., which were difficult to evaluate.

It is obvious that these students, as a group, could not be classified as hard core unemployed. High school diplomas and GATB scores one standard deviation above the mean are not typical of the hard core unemployed. Employment patterns of many of the students were typical of the underemployed for they had shifted from one job to another, never gaining any satisfaction or suitable monetary reward.

Programs designed with different objectives should have some differences in construction. These can be seen from the chart (Transparency 4). The major differences may have been more in the area of operation than construction of the program. In Allentown, all related work was built around the Tool Design objective. In the Altoona program, related subjects were treated as discrete subjects. We did find that condensing these programs into one year tended to reduce the degree of difference that would normally be found. An interesting bit of related research conducted by Dr. Bjorkquist had to do with textbook readability (Transparency 5). The difference between the two programs

PROGRAM DISTINCTIONS

	Program A (Job)	Program B (Field)
Scope Emphasis	Depth	Breadth
Orientation	Job	Field
Objectives	Tool Design Technology	Machine Tool Design & Mechanical Technology
Facilities	Post-High School Vo-Tech School	Penn State University Altoona Campus (2 yr.)
Curriculum Development	Industrial Committee	Engineering Faculty

TRANSPARENCY #1

TRANSPARENCY #2

CRITERIA FOR STUDENT SELECTION

1. Eligible for MDTA training.
2. High school graduate or equivalent (GED).
3. Familiar with mechanics or machine operation.
4. Expressed desire to be retrained as a technician.
5. Satisfactory attitudes.
6. Confirmation of aspirations through interview.

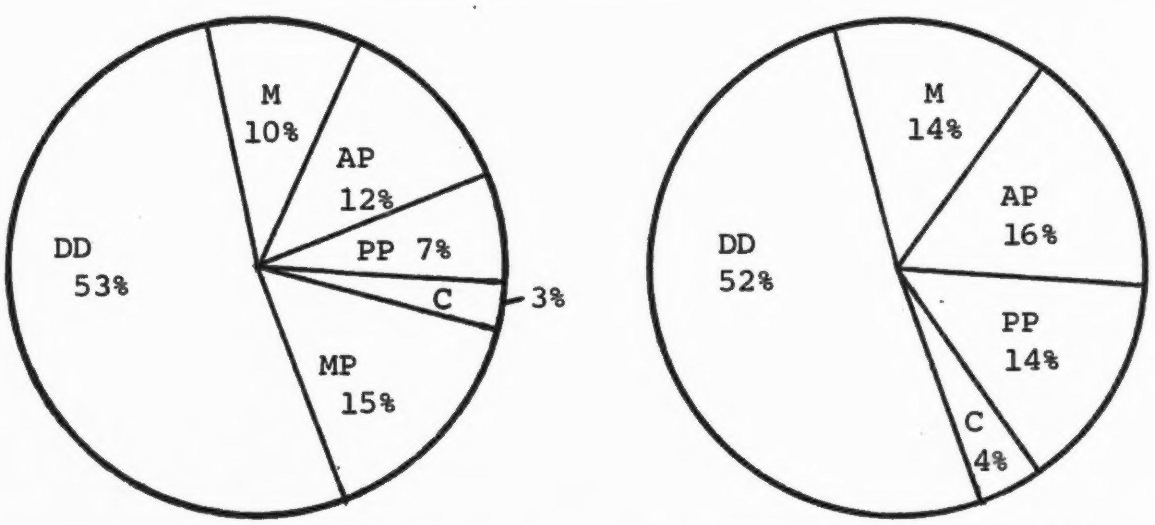
SIMILARITIES IN TRAINING GROUPS

	Program A (Job)	Program B (Field)
Number Enrolled	35	40
GATB Scores:		
G Scale	121.5	123.0
N Scale	116.8	117.5
S Scale	125.8	127.1
Previous Education	12.4 yrs.	12.2 yrs.
Age	23.7 yrs.	23.7 yrs.

TRANSPARENCY #3

TRANSPARENCY #4

CURRICULUM CONTENT



Program A (Job): 1637 Hours

Program B (Field): 1616 Hours

DD-Drafting & Design
PP-Production Processes
M-Mathematics
C-Communications
AP-Applied Physics
MS-Machine Shop

are quite noticeable. I am inclined to think that the fact that we selected books with a somewhat low reading level made it possible for us to keep some of the students in the program while they improved their reading.

Reading level of many students in vocational education poses problems at both high school and post high school levels. This matter deserves extensive study if we are to serve the great number of students we are asked to enroll.

The slides I have just completed have provided some basic comparisons of the field and job oriented programs. The next phase of my presentation will be directed to the development and operation of the job oriented program.

The structure of any educational program will reflect the philosophy of those who do the planning. Philosophies are based upon many factors, experience and education probably being two of the most important. For example, the academician may tend to view education as an end in itself, and develop programs on the basis of intellectual content rather than application of subject matter. On the other hand, the person who has a blend of education and practical experience will view education as a means to an end: the end being performance on the job. In such cases, each unit of a program is developed as a tool subject, with application the final test. My own background, and that of the people who assisted in the development of the program, tended to be along the latter lines.

You have seen a chart showing some comparisons of the makeup of the job and field oriented programs. With the exception of machine shop practice, differences are more of degree and method of operation than major differences in subjects taught. Instead of placing a great deal of stress on these minor differences, I would like to share with you some of the philosophy that we use in developing any program of vocational-technical education. This may be of some value to you in your future assignments.

Considerations in the Development of Vocational-Technical Programs

1. The term "technician" is a broad term.

This I'm sure is not a very profound statement, but it is extremely important that we keep in mind the fact we are using a generic term which is interpreted in many ways. We should, therefore, be extremely careful to pinpoint job requirements rather than assume we know what a person means when he uses the term. We see auto mechanics classified as technicians, scrub nurses without nurse training termed operating room technicians, and in some areas, people with Baccalaureate degrees working as technicians. The manipulative skills and related information required by these three classifications of technicians have little in common. It is therefore imperative that we define the job in terms that are understandable to all if we are to communicate.

TEXTBOOK READABILITY

	Number of Books	
READING GRADE LEVEL	PROGRAM A (JOB)	PROGRAM B (FIELD)
13-16	1	10
10-12	1	8
8- 9	3	1

TRANSPARENCY #5

TRANSPARENCY #6

COMPARISONS OF ENROLLMENTS AND COMPLETIONS

	PROGRAM A (JOB)	PROGRAM B (FIELD)
Enrolled	35	40
Completed	32	25
% Completion	91.4	62.5%

EMPLOYMENT 6 MONTHS AFTER TRAINING

Empl. Status	Industry	Military	School	Unempl.	TOTAL
Allentown	28	3	0	1	32
Altoona	19	3	2	1	25
TOTAL	47	6	2	2	57

2. Technicians may be classified as "Engineering-Aids" or "Industrial".

The understanding of these two classifications of technicians may be as nebulous as the term "technician" itself. Differences in the preparation and functions of these classes do exist although they are difficult to pin down and probably exist as a broad band in which both classes have some common responsibilities. Classification itself is unimportant. The important thing is to define these differences in terms of job requirements.

3. The need for industrial technicians exceeds the need for engineering-aide technicians.

This statement refers to the Allentown, Pennsylvania area which is the area of my particular interest. Dealings with other areas lead me to believe that this is probably true in many parts of the country. However, this is a matter each of you will have to determine in your geographical areas of interest.

I might note that I believe that a core program of technology can be developed which will meet the needs of both of these general job classifications. Time does not permit expansion of this subject presently.

The next seven points refer primarily to programs for industrial technicians, and within these points, we may find the major differences between the job oriented and field oriented programs.

4. The job of the technician can be identified.

The duties of most technicians require a somewhat broad background. However, an analysis will permit the identification of the abilities required to function as a technician. Rather specific programs can be developed to prepare these technicians whether it be in the field of electronics, mechanical, civil or other technologies. Although there may be disciplines involved in any of these programs, contact with industry will make it possible to identify the general parameters within which we must work, and a program can be structured to meet these needs.

5. Neither vocational, nor engineering education is entirely suitable preparation for a technician.

The job of a technician will include work similar to that of the engineer and some similar to that of the skilled craftsman. However, the educational program for preparing technicians should differ from those of vocational and engineering education. We are talking about specific job responsibilities which require specific training programs. I might note that my personal philosophy is such that, if I am to err in the development of a technical program, I would want to err in the direction of a good vocational program than slant the program towards the highly theoretical approach used in engineering education today.

The approach to the operation of the program from this thinking may well be the greatest difference between the job oriented and field oriented programs.

6. Mathematics and science requirements are in the application of laws and concepts.

The mathematics and science requirements for industrial technicians are more in terms of the application of basic laws and concepts than a deep understanding of highly theoretical principles. For example, the technician should be able to analyze a problem, submit it to the most basic formula possible, refer to tables when appropriate, use the slide rule, rotary calculator, or any other device which will expedite the solution to the problem and come up with the answer in the quickest possible time. The industrial technician should master basic algebra, trigonometry, and in some cases geometry. A mastery of the highly theoretical aspects of mathematics should not be a requirement of the educational program. The same thing is true in the study of the science. Much of the physics a technician uses is based upon an understanding of functional mathematics and not calculus as found in many physics courses.

Our approach to this matter is to include some of the theoretical aspects of mathematics and science in the program for background information and to provide understandings and appreciations of the job of the engineer. However, we do not test for competencies in such areas and do not use them as weeding out devices, which is a common practice in some technical education programs.

7. There is an entry level job in every technology.

There are entry level jobs in any technical field and it is important that any program of technical education provide for these competencies. For example, if the entry level job of mechanical technology is on the drafting board, the educational program must provide the student with the drafting skills required to hold this job, for if the prospective technician does a poor job at the entry level, he may never get the opportunity to show how much he knows about the higher elements of the job. In line with this thinking, we include enough of the basics in any program to enable the technician to become established.

8. Theory is most meaningful when related to the technology.

This is something which vocational education has tried to practice for years. Unfortunately, it is often difficult to establish the proper relationship between academic and shop teachers to really make this effective. Problems in coordination at the post high school level are often more difficult due to the departmental organization of community colleges and technical institutes.

The treatment of any phase of a technical program as a discrete subject is highly arbitrary and in the long run can be detrimental to the program. As I view our educational system today, we are coming to a point where each subject is being taught completely independent of all other subjects. This is perhaps most noticeable in mathematics. The head of a mathematics department recently said to me, "I cannot apply mathematics to industrial problems, and I do not believe it is the job of the mathematician to be able to apply math." If this were to be the case, we would find that mathematics as taught in schools would have no counterpart in life, where we find mathematics used as a tool. I cannot accept this idea. If combining application with the theory of mathematics and science will improve learning, and I'm sure it will, then we should strive to have mathematics and science departments which will function in this manner.

9. Objectives of related instruction should be clearly defined.

The objectives of supporting areas of instruction should be clearly defined in respect to the manner they are to contribute to the major objectives of the program, and structured accordingly. For example, the purpose of machine shop practice in our program was to provide an understanding of the capacities and limitations of machines and not to develop manipulative skills.

Once a student understood that certain design features such as close tolerances and fine finishes increased the cost of producing the part in terms of both skilled manpower and quality of machine, we had reached our objective. Whether or not the student could operate the machine to a thousandths of an inch was immaterial to us.

Similar evaluations of objectives are also required in general education subjects. For instance, the purposes of psychology in a technical program is to provide an understanding of the people with whom the technician will be working. In my opinion, a course in human relations is much more applicable for a technician than introduction to psychology, a course which is really intended for students who will be taking other courses in psychology. Yet, the common approach is to include theoretical courses in psychology because of the background of the teachers.

10. A technician needs general education.

A technician needs an understanding of some of the broader aspects of life such as communications, human relations, economics, etc. However, in the restricted time available in two year programs of technology, a limited amount of time is available for these subjects. They should be made as functional and meaningful to the student as possible, and we should not sacrifice the required courses for those that are desirable. One way to handle this problem is to encourage students to enroll in general education courses after they have completed their technical training and are on the job.

The ten points which I have listed influenced us greatly in the development of the job oriented program. Some we were able to satisfy, others such as human relations we could not offer due to time limitations.

There were additional things which we had to take into consideration. MDTA funds were paying all costs of the program. We therefore had a responsibility to do everything within our power to see that there was a maximum number of students left with saleable skills. Some of the things which we learned as a result of this belief are very important.

Early in the program, we agreed that to meet our responsibilities in retraining, we would use only one measurement of ability for retention. This was the ability to perform as a draftsman. Students were graded in all phases of the program, but decisions relating to retaining a student were made strictly on our evaluation of his ability to fill some job in drafting. I would like to reiterate that this was a philosophy concerning our responsibilities in retraining and did not mean we approved of this as a good measurement for tool design. We gained many experiences from this that have influenced us in other programs. We took 35 students into the program. One was sentenced to a jail term within a week of the start of the program, so he can hardly be counted a drop-out. Two others left at our request, not because they couldn't do the work but because they cut classes and were generally unreliable. Of the 32 who completed the program, two failed mathematics, mechanics and strength of materials. Others were marginal in this work but received passing grades. The number of individuals is relatively small but we can observe no difference in the work now being performed by those who flunked these courses and those who made A's. In fact, I believe that the two who failed these courses are probably earning the highest salaries at this time. Strange as it may seem, we obtained a job as a draftsman for one of the men we dismissed, and the other one got a job on his own. To the best of my knowledge, these two men are still working in the field. They did, however, demonstrate the same unreliable characteristics with their first employers as they did with us and both were dismissed from their first jobs.

On the basis of this experience, we wonder if we don't set standards of performance in mathematics and science which are arbitrary as far as industry is concerned.

The second related bit of information which we obtained from this program had to do with admission requirements. The nature of the program made it seem desirable to accept only those students who had completed two years of algebra. However, we knew that mathematics courses vary in content and depth from school to school so we finally rejected this as a requirement. As you will note in the official report of the project, achievement in mathematics prior to entry into the program had little relation to success. In fact, one student who had never had algebra prior to admission to the program ended up as a tutor for those who experienced difficulty. These results have been confirmed in other more complex studies. However, we still seem to ignore the results when we screen students for a program.

We also learned things that changed our entire concept of the manner in which design should be taught. The machine shop we were to use was only available to us in the early days of the program. This conflicted with our desire to use machine shop practice as a means of testing design features. At least this was what we thought. We decided to take a gamble and move the students directly into basic design instead of taking the usual approach of teaching all aspects of orthographic and pictorial projection first. As soon as the class understood the principles of orthographic projection, they were assigned design problems.

The class was divided into teams with each team assigned the task of designing a paper punch and a paper drill. Designs were submitted to the class and three designs were selected for manufacturing in the machine shop. This permitted the students to see how design features influenced manufacturing processes, time requirements, production costs, and to evaluate the performance of the design. We found this to be a very important part of the program for it gave the student an early introduction to the relationship of design and manufacturing. The reproduction of plates from a textbook as is commonly found in such programs was never used.

Evaluation is an important part of innovation. In fact, many good plans have been tested and rejected by the mass of educators because those who operated the pilot programs failed to make a good evaluation of the results. I would remind you again that innovation means changing the establishment, and to do this, we must prove beyond any reasonable doubt that the new way is best. This is difficult to do when attempting to measure human progress for this cannot be subjected to finite measurement. You should also remember that evaluation means measurement and interpretation. There are many pitfalls in both phases.

My comments concerning comparisons of the job oriented and field oriented programs may have limited meaning to you for you have not had an opportunity to hear an extensive report on the field oriented program. This will be available to you in the pamphlet Dr. Nelson will distribute to you this evening.

I must also say that I became so deeply involved in the development and operation of the job oriented program, and in counseling, placement, and follow-up of the students that my comments may not be as objective as desired. You will have to take my biases into consideration as we discuss evaluation.

Enrollments and Completions (Transparency 6).

The differences in percentage of completion are quite obvious: in view of the fact that this is a program for retraining the unemployed, I believe this is very important. To make these people employable, we had to get them through some type of a training program. In view of the similarities of the two groups initially, and our experience with students who failed courses but still succeeded on the job, I would suspect that many of those who flunked out of the field oriented program probably would have been successful if they would have been retained.

Transparency 7 is interesting in that it is subject to different interpretations. At first glance, we might say that the graduate of the field oriented program was worth more money. In reality, I believe that further investigation will show that more of this group were willing to move to areas where they could demand higher salaries. Discussions with Dr. Bjorkquist, Research Director, indicate that when the two groups are compared on the basis of mobility, the salaries are almost identical. This illustrates some of the problems of interpretation.

Transparency 8 illustrates some of the entry level competencies used by the graduates: 93% of the job graduates and 83% of the field graduates used drafting skills. Regardless of potential, their futures would have been in doubt if they would not have been able to perform these jobs. It is also interesting to note that approximately 74% of the graduates used design skills immediately upon graduation.

Transparency 9 shows the relative importance of the various phases of mathematics. This would seem to indicate a need for a mastery of the fundamentals of algebra, trigonometry, and plane geometry. Again we find a problem of interpretation for just how much depth in these areas is needed? A deeper analysis would be required to determine this.

Transparency 10 summarizes the graduate course-value ratings. Ratings of courses by graduates pose some interesting questions. First of all, we can note a general increase of the value of the courses to the students as their responsibilities are increased and vision broadened. Secondly, they place a higher value of those courses designed to give them an understanding of the relationship of design to the total manufacturing process. Third, and perhaps of great importance in motivating other students is the increased value of mathematics and communications. We plan to use this chart in an orientation course for all our technical students, for mathematics and English always pose problems in terms of motivation.

This graph (Transparency 11) illustrates the students reaction to several aspects of the employment situation. It is perhaps strange that job graduates are more satisfied with supervision and type of work while field graduates are happier with pay. Perhaps the fact that more of the job graduates were content to stay in their home areas and started at somewhat lower salaries influenced this attitude.

Measurements of employer satisfactions with the work of the graduate (Transparency 12) failed to show any measurable difference between the two groups. In view of the number of students we retained in the program, and in spite of limited mastery of related areas of instruction, this tends to confirm my belief that standards in these areas of instruction are quite arbitrary and often tend to weed out students who could be successful.

We have reviewed a mass of data and basic philosophies in the past 90 minutes. These have concerned innovation as reflected in this specific program. Some of this will be forgotten in the other discussions which are ahead of you. However, for those of you who want to review and explore these in more detail, you may do so by studying the reports Dr. Nelson will give to you. I am also sure that he will be glad to give your names to Dr. Bjorkquist for receipt of the final report.

This study and the reports from it will have little value unless the results are incorporated into new or existing programs. I can assure you that this is being done in the Lehigh County Community College for we are structuring all of our technical programs around the basic

BEGINNING EMPLOYMENT INFORMATION

VARIABLE	PROGRAM A (JOB)	PROGRAM B (FIELD)
SALARY	$95.56	$110.05
MOBILITY	28%	56%
WEEKS TO SECURE FIRST JOB	3.93	3.76

TRANSPARENCY #7

TRANSPARENCY #8

ENTRY LEVEL COMPETENCIES USED BY GRADUATES

JOB SKILLS	A %	B %	JOB SKILLS	A %	B %
Freehand Lettering	93	78	Fixtures	57	39
Sketching	89	67	Jigs	50	28
Sections	86	78	Dies	25	6
Ortho. Projection	79	78	Molds	4	11
Auxiliary Views	86	55	Machines	21	28
Revolutions	46	39	Tools	46	33
Dimensioning	89	72	Layout	39	44
Scale Drawings	89	78	Products	11	17

ENTRY LEVEL COMPETENCIES USED BY GRADUATES

JOB SKILLS	A %	B %
Arithmetic	100	94
Algebra	75	78
Plane Geometry	71	83
Solid Geometry	18	33
Rt. Angle Trigonometry	89	83
Obl. Angle Trigonometry	75	66
Calculus	0	0

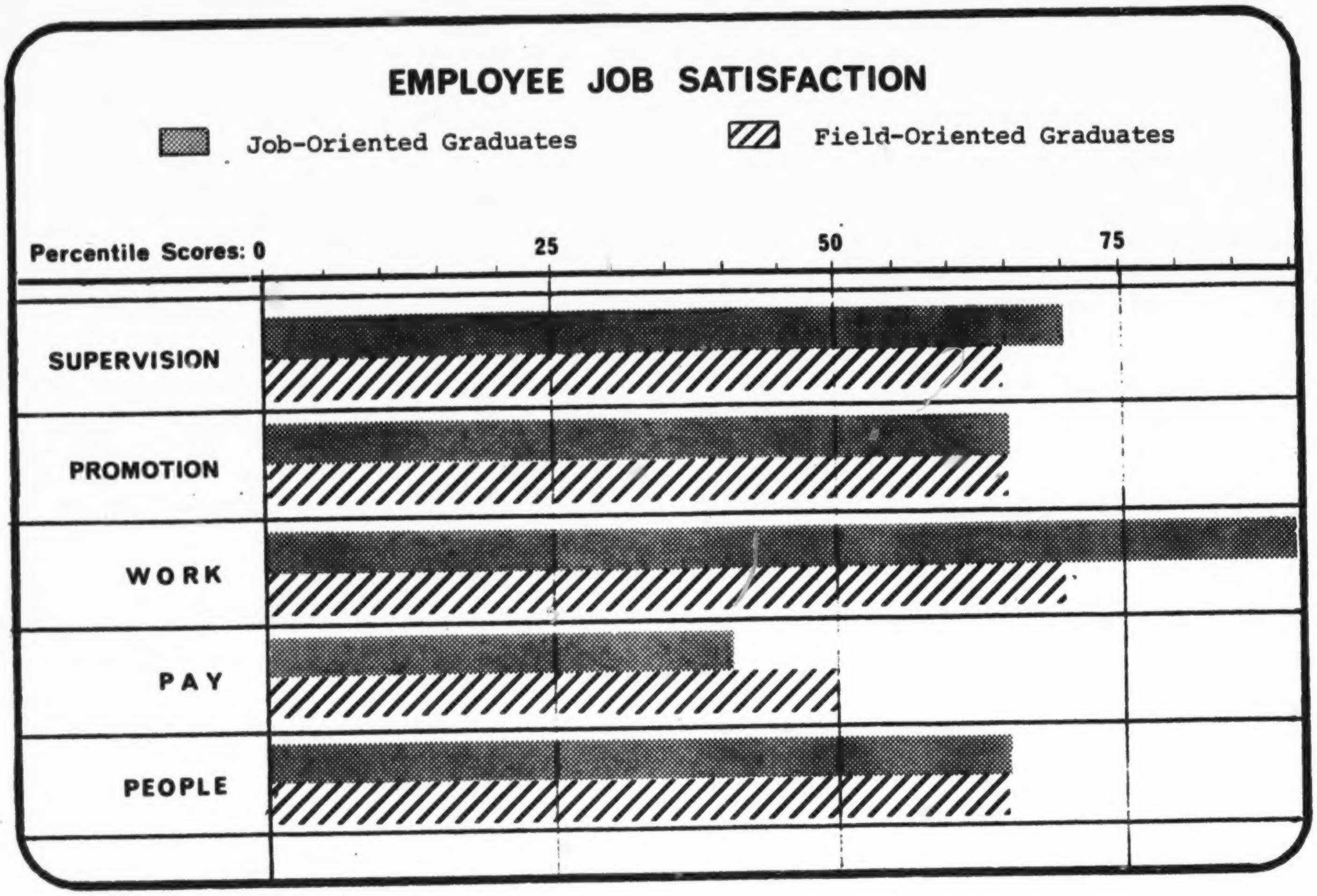
TRANSPARENCY #9

TRANSPARENCY #10

GRADUATES' RATINGS OF COURSE VALUES
(Job-Oriented, Program A)

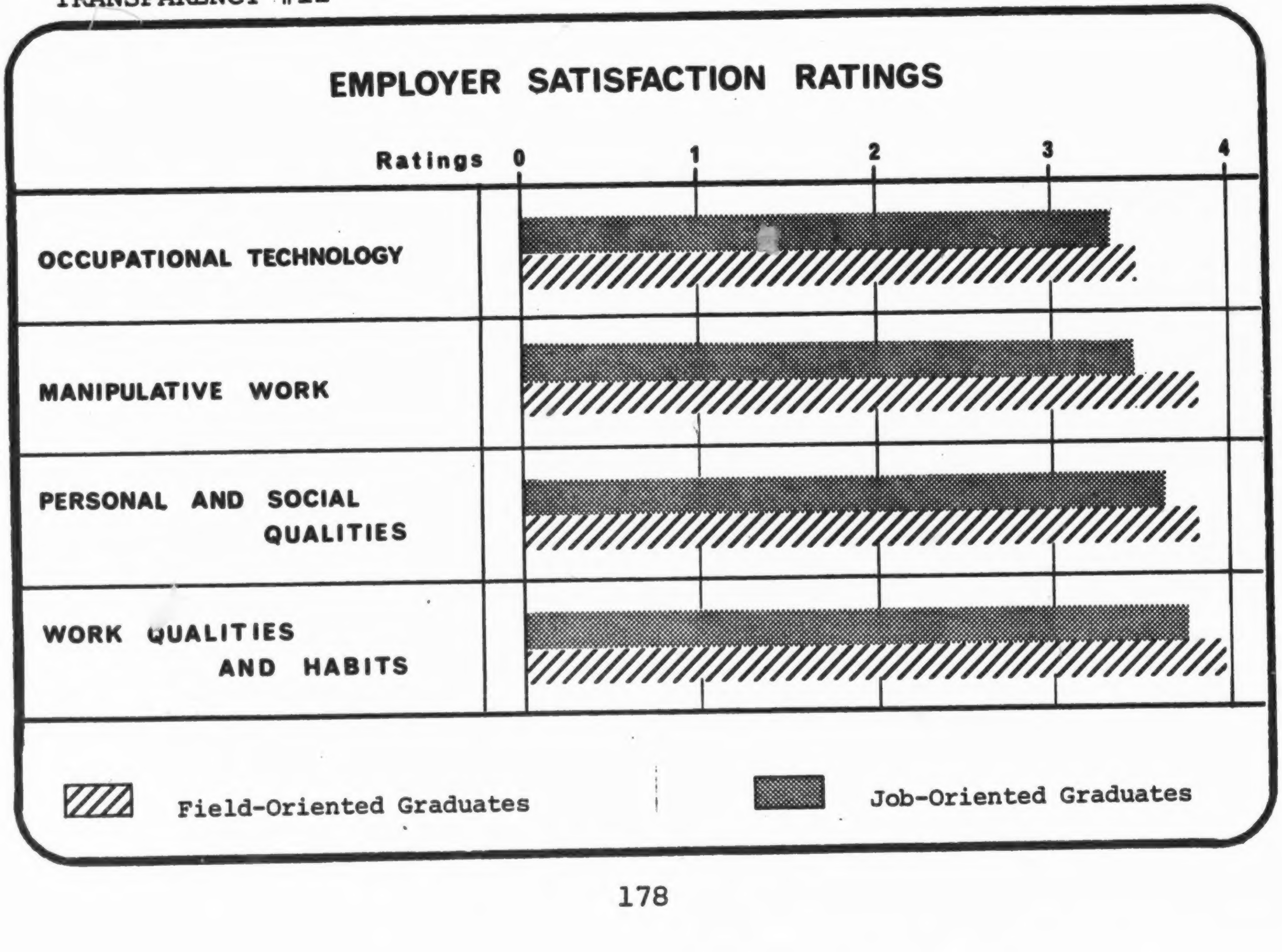
+1 year	COURSE	+2 Years	
3.60	Basic Engineering Drawing	3.90	
3.40	Machine Shop	3.90	
1.23	*Mathematics	3.90	
3.00	*Mechanics	3.57	
2.90	*Communications	3.50	
3.14	Tool Design	3.47	
2.83	*Field Trips	3.37	
3.40	Strength of Materials	3.33	
2.73	*Manufacturing Processes	3.33	
2.60	Welding	3.03	
2.77	Production Problems	3.00	
2.23	*Quality Control	2.90	
2.70	Metallurgy	2.70	
2.33	Hydraulics	2.47	
1.53	Pneumatics	1.97	
AV.2.69	(*Significant)	AV. 3.22	(gain .53)

SCALE: 4-Much Value, 3-Some, 2-Uncertain, 1-Little, 0-No Value



TRANSPARENCY #11

TRANSPARENCY #12



results of this study. We have reviewed these findings with industry, particularly those relating to mathematics and science, and they have accepted them. I must admit that we have had some problems with our academic departments for they tend to look at their courses as independent subjects rather than tools of a broader curriculum. These feelings are being changed gradually through a program which makes it possible for us to take academic instructors into industry where they can observe technicians at work, study the application of their subject to the job, talk with supervisors, personnel directors, and others who are capable of making judgments concerning the value of various phases of the program. These trips have been time consuming but have been of real value to us, and of more importance, will be of value to our students.

We are fortunate in this respect for the president of the college has a strong belief in vocational-technical education and has given me virtually a free hand in developing and implementing programs. We decided to establish a strong program of orienting academic staff members while we were small -- now we can concentrate on new staff members each year. We are extremely happy with the results at the end of our first year of operation and are looking forward to a bigger and stronger program of technical education as we sell these concepts to all members of the staff.

MAKING USEFUL PRODUCTIVE CITIZENS OF SLOW LEARNERS

Mr. Erwin J. Klein, Principal
Market High School, Warren, Ohio

Slow-Learner Programs in Ohio.

Let me start out by defining what we mean in Ohio by the term, slow learner. We are talking about persons who range from 50 to 80 in IQ. These are the people who are called educable mentally retarded in other states.

There is an interesting story about the way that programs of these slow learners started in Ohio. Quite a few years ago, a group of educators went to the state legislative and said: "We would like to start a program for slow learners," (at that time the term used was mentally retarded). The legislators said, "I'm sorry, but we have institutions for these people," -- and they turned the bill down. The next year the educators went back with the same bill, and the same speech -- the legislature again said that they were sorry, but we have institutions for these people -- and turned it down. The third year the educators finally wised-up and said, "We want to help the slow learning children who have difficulties in school." The legislators said: "That's great," and they passed the first legislation for special education in Ohio. This is the reason that Ohio calls these students slow learners, instead of using the EMR's.

We started out in Warren, which is a diversified industrial community of about 65,000 people, with a program of tracking. We divided the schools into three different tracks: the above average, average and below average. This system worked fairly well for the first couple of years, and then we found that the tracks themselves, were splitting up. The one that I am specifically interested in, the below average, began to divide itself into one group of students who were capable of doing better work, but were not interested; and another group that was possibly interested but not capable.

Problems in Existing Systems.

In Ohio, we take these special students and put them into a self-contained class within the regular school building. The junior high school where I used to work started one of these programs. As guidance counselor, I was particularily interested in keeping an eye on these students. We began to notice some interesting things.

One of the first things we noted was that when the students would come out of the special education class to go to some regular classes (shop, home economics, physical education, etc.), other students would start to sing-song: "Here come the dummies," and that sort of thing.

Another thing we noticed was that, when the students would go into an industrial arts class, they would want to make a project -- just as the other students were doing. (There would be several special education students within a regular shop class.) The project would require turning on a saw to cut the wood. The first thing that would happen is that the shop teacher, not knowing much about special ed students, would run over and say: "Don't you touch that machine. If you need something sawed, let me know and I will cut it for you." This kid would then have to stand back and watch other kids using the saw, while not being allowed to use it himself.

The students would go into the gym class. The kids in the class would be choosing-up teams and the others would start: "You take him -- we had to have him yesterday."

All of these illustrations lead up to the point that, whereby, the special education people say that these students should be in self-contained classes in regular schools, we found out that the idea did not work because these children were not made to feel a part of the school. They were not happy.

You know that peer group acceptance is a great thing in this world. It is one of the most important driving forces we have. These special students were not being accepted by the peer group in their school. They could not partake in the activities because their grades were not good enough. They did not feel that they were a part of classes when they were called names by the other students.

Impetus for Market School.

Then, about this same time in Warren, we had one of these population problems. At the time, we had one senior high school, three junior high schools and eighteen elementary schools. The population explosion hit the junior highs and there just wasn't room for all kids in the junior high -- nor in the senior high.

Now, several of us had been agitating about doing something to help the special education kids for a long time. (By the way, when I use the term kids, this is their choice of words. I asked them what they wanted to be called, and the said, "Call us kids. That's what we call ourselves." So, I have gotten used to using that term.) The problem arose as to what to do with these students. In looking around, we found that we had in the district an old, old elementary school building near the center of town that was about to be abandoned. The superintendent came to me and said, "I know of your interest and your work with these students. Would you like to try something for us?" And I said: "I would like to try anything, because these kids need help." So, we set up a program whereby we would take these students from seventh, eighth and ninth grades into this old elementary building and make it a special junior high school. This occurred in September of 1960.

Initial Rationale and Organization.

That summer before the program started, I visited the homes of every one of the students we planned to have in this program. I talked to the parents and told them what we wanted to do. I said to them, "We would like to put your child in here because I think we can help him more. This program has never been done. I don't know what we will come up with, but we simply want to try it out."

We started out with 180 students. The program was a voluntary thing that first year. At the end of that year, we still had 164 students left. There was an average attendance improvement of five and a half days per pupil over that recorded in their past records.

We started our program by throwing out the existing curriculum, completely. We said that these people usually hit the high school and then at about tenth grade they reach the age when they are permitted to quit. What is happening to most of them is that they bide their time until they are 16; then they quit. So, we figured we had better find some way to give them what we could to prepare them for the world outside -- before they went outside. Our theory was to provide what we call, terminal education, for these seventh, eighth and ninth graders.

At the end of that first year, we had quite a surprise because the ninth graders informed us that they were coming back the next year for the tenth grade. We hadn't counted on that -- we figured that they would just drop out of school.

At the time, the State of Ohio had been saying that approximately twenty-four out of every one hundred ninth graders would not graduate from high school. At the end of the first year of our program, the Warren schools' dropout rate was down below twelve percent. The dropout rate of our special school was 2.88 per 100. The dropout rate in the other schools decreased, mainly, because the students we took out would have been the main ones which would have dropped out, if they had remained there.

When the superintendent hired me for this job, he said: "There is no tradition, no precedent. This had not been tried before that we know of. We can't find anyone who has done it. In fact, the special education department says you cannot do it. Since there is no tradition and no precedent, try something. If it works, use it. If it doesn't work, throw it out and try something else."

So, being the good installer that I was, I approached my new faculty of nine teachers and said, "We have no tradition and no precedent. You have all taught classes somewhere, or another, and you have all run into these students in class. You have gotten frustrated trying to help them in a group of 30 or 35 students. Here's your chance. Grab an idea that you think will work with them -- try it. If it works, use it. If it doesn't try something else. The only thing I ask is that you tell me what you are going to do before you try it, because the telephone is on my desk and I have to answer the questions."

From that grand beginning we started Market Junior High School.

Academic Core: Grades 7 and 8.

We know that most of these special ed students could not read beyond the third grade level. It would be ridiculous to give them a seventh grade book and tell them to read a chapter because the following day they would have a test on the chapter. So, we threw all the books out and went looking for special books.

At that time, I couldn't find any, but I found the greatest thing in the world -- an old hand cranked duplicating machine. We set it on a counter in the office, along with a big stack of duplicating paper and ditto masters, and said to the teachers, "OK. You are supposed to be working with these pupils as individuals, now build programs for them as individuals."

We made the classes self-contained. Each teacher had his class for four hours during the day. During that four hours they were to cover four major subjects: social studies, English, science and mathematics. How much time was spent on each subject? This was strictly up to the teachers -- and the student.

You know, how it usually goes in school: you'll be teaching a class in social studies, it is going along very well, then, the bell will ring and you have to change classes. Well, we don't worry about the bell, we just keep on going because we have the student for a whole four hours. In fact, if you have a good unit going and it takes up all four hours, and the students are interested in it, that's fine, because tomorrow or some other time you can catch up with the other subjects -- they will level off. If you get started in arithmetic today and, after fifteen minutes, the students begin to get restless or bored, switch to science. Flexibility is one of the keynotes of the program. The most important thing about any subject that you are going to teach this student is to gear it to the level of the student, and make it something that he can use.

One of the best textbooks is the local newspaper. Take the newspaper into the classroom; read and use it together. You can read a lot of social studies, you can read a lot of science, and a lot of arithmetic. And certainly, the reading is part of language arts. One of my favorite tricks has been to walk into the room, where students had their newspapers out, and give them a shopping list: telling them to use the newspaper to decide where to shop. They would put down the page number, the name of the store and the price of each article to be bought. They were then to assume they had twenty dollars and, when I came back in a half hour, they were also to tell me how much change they would get back. Of course, we never ordered a pound of hamburger -- it was always a half pound, or something like that, so, we get a little arithmetic involved. You would be surprised at the number of these students who had never been aware before that you should count change. They just took it for granted that when someone gave you change it would be the right change.

You would be amazed at the number of students who had no conception, whatsoever, of what it costs to live, today. Many of them were from families (approximately 60 percent) that we call culturally deprived, or disadvantaged. Many were on welfare or public support programs. A lot of them, too, were talking of getting married when they were nineteen. So, whenever one of the kids would start talking about how much money it cost to do something, we would make this topic into a good arithmetic problem.

Budgeting became quite a program in our classes. We would go to the local finance companies and tell them exactly what we wanted to do -- to help the students understand loans and interest practices. We told them we were trying to wreck their business, and they said, "That's fine," -- and gave us pamphlets and brochures to use in class. They said: "We don't think that you will bother our business that much, and we are glad to have our name on a piece of paper that you have in the classroom, because the kids will remember our name then. So, go ahead." We are still using these materials.

At seventh and eighth grade, the students concentrate on the academic subjects. Whatever level they come to us, we start working with them at that level. Our average classroom size is cut down to sixteen students for each teacher. If you walk into a class, you will find a few students grouped in one area working on arithmetic. When they make the switch from arithmetic to another subject, the groupings will also change. A boy in one group in science may be in another group in another subject. This arrangement makes it a very difficult job for the teacher to keep things going. He must be on his toes all the time because he's working with sixteen individuals, not with a lump of sixteen people.

Part of the theory of the four-hour program is that the teacher has to get to know the student. You know, we found some amazing things coming about as a result of this organization. For the first time in their lives, some of the students found out someone was interested in them -- somebody did care -- and we got some tremendous results! Attendance immediately went up, dropouts went down -- even the number of juvenile court cases dropped.

We used to have many youngsters who were first and second offenders, and bragged about it; but once our school really got going, it was no longer something to brag about. It became something not to do, and they began to accept this new idea.

I told you that we are using an old elementary building that was built in 1899. It was painted when we came in 1960. The inside walls were scrubbed in 1963. When the clean-up crew from the district came to wash them down again this past June, they said: "What do you want this washed-down for? We can't find a mark anywhere in the building." I said, "Of course, you can't -- we have the best kids in town in this building."

I have a standing bet with visitors who come through our school (and we average about ten a week) that they will not be able to find a name written on a wall anywhere in the building. In eight years, we have not replaced a desk top -- we have not refinished a desk top -- and you won't find a desk top with a name carved in it, a hole punched in it, or anything else. Once in awhile, someone will put a mark on a wall. The custodian does not take it off. Usually, what happens is that a member of the staff calls over one of the kids and says, "Hey! Somebody is writing on your walls." The students will take the mark off themselves, and usually, find out who did it. Then, they tell that person not to do it again.

By the time students finish the eighth grade we figure they have had about all they can handle of regular school subjects. They are reaching the stage where they are getting bored.

A Special Type of Staff.

As I have said before, it is a tremendous challenge to the teacher, because he has to keep each individual student challenged, but not discouraged. This puts a tremendous load on this teacher -- and he must be a special teacher. They are not special when they come to us, but they are by the time they have been with us a while. I say they are not special when they come to us from the standpoint of training. We like to have them with training in special education, but unfortunately, in our part of the country there are not enough of them available. So when I look for the teacher, and the personnel office calls me to say they have a prospect, I ask, "Does he have a teaching certificate for secondary schools?" If they say, yes, I tell them to send him over so I can talk with him. From there on in, I work strictly on the principle of personalities.

Personality is the important thing for our teachers. These teachers must be willing to work with these students. They have to accept the child as he is when he comes -- he may use foul language, he may be filthy dirty, or he may be a son, or daughter of a local physician. (The president of our PTO last year was the head of one of the drug companies in town.) You cannot use a missionary - style person in this job -- a do-gooder. The teacher must be sincerely interested in people. Give me a teacher who is sincerely interested in this student, who is not going to be shocked by what he hears or sees -- but who will try to improve everything every time he gets a chance -- and I will have a successful teacher.

Of the original nine teachers that we started with, I still have four. Three who left were women whose husbands moved out of town to take new jobs. The other two teachers just weren't successful in this type of job.

We now have a total staff of twenty teachers because Market Junior High School began to grow. The students completed ninth grade and came back for tenth. They completed the tenth grade and came back for eleventh. They finished the eleventh grade and came back for twelfth. And there we were -- all the time trying to keep one step ahead of them in building a program.

Getting a State Charter.

Wherever we went, we couldn't find any help. People kept saying, "You cannot segregate these students in one school." We said, "We are doing it." The state told us the first year that we, positively, could not do it, but we said, "It's a local school, and we're going to try because we are not successful the old way." So, the state gave us an experimental charter for one year.

At the end of the year, the state supervisor came back and said, "Well, are you satisfied now?" I said, "No, I'm not satisfied -- I think we are getting somewhere." So, they gave us an experimental charter for another year.

The supervisor came back at the end of the second year and said, "Well, by now you must know." And I said, "By now, I know we are right; we are helping some of them and here are some figures and data on what has happened." He said that he would give us one more year -- then we would have had it.

He gave us a third year experimental charter and came back at the end of the third year. He looked at some of the things that had happened; went through the building; talked to some of the students; talked to people in the town and the fourth year they handed us a charter as a six-year secondary school. This gave us all the rank and privileges of any high school in the State of Ohio. It gave us permission to grant a diploma -- which we now do.

Interest Areas: Grades 9 and 10.

The program continued to grow so we devised the idea of making the ninth and tenth grade program interest areas classes.

(Horticulture)

Through the efforts of Bill Dunton, Supervisor of Industrial Education in the Warren City Schools, we were able to get a 76-acre farm from the United States government. This property had been purchased by the government for use in relation to a proposed military jet base at Youngstown Air Base -- about nine miles from us. Before the base was fully developed, it was moved elsewhere; so the farm became surplus property. Bill Dunton processed the arrangement, and in all it cost the school about $25. To us, it has been equal to a multi-million dollar investment.

The farm had a bunch of old buildings that were about to fall over. About the same time, we had some boys who were about ready to take the world apart. So, we put the two together. We gave the boys hammers, axes and saws; took them out to the farm and said, "OK, boys you're mad at something -- tear 'em apart!" and we let them knock apart all the old, useless buildings. We said, further, "If you still feel that you want to take some action on somebody, here are some scythes and sickles -- go to work on these weeds which are up over your heads.

Clean this place up. If you are mad at somebody, take a swing at that pile of junk over there." The system worked.

It was at this farm that I learned an important lesson about these students.

There was an old cement pig-pen on the farm. When you walked inside of it, besides the odor, you had to stand like this (stooped) because it wasn't high enough to stand up in. It was a nice big building; it was solidly constructed, but it just wasn't tall enough.

The boys said to me, "We want to make a shop here at the farm, and this (pig-pen) would be a good place for it." I said, "You can't do it, it's too low." But they said, "We're going to raise the roof." Now, my father was a building contractor and I knew that you couldn't raise the roof because you would break the beams and rafters -- and we didn't have the complex machinery necessary to do the job. It would be cheaper to build a new building. So, I said, "Fellows, it is a great idea, but you just can't do it." So, they did it.

They removed the ceiling joists, one at a time, shortened them and replaced them high enough on the rafters to provide plenty of headroom. Now, we have a wall that goes up and over with a slightly slanted roof. They they cleaned it up, put cupboards in it, painted it, put aluminum siding on the outside and, when they finished, they said: "Well, here is our shop." And I said, "Beautiful." This is the last time that I ever told boys, or girls, in that school that they can't do something. They know more about what they can and can't do than I do.

Some of my friends in the special education field said, "These children know nothing about ratio and proportion." I forgot to tell my kids that, and they went to work in the classroom and made a scale model of the new shop building they had just completed. They drew a floor plan, cut-out paper machinery the size of the equipment for the shop, and moved the equipment around on the floor plan until they had planned the entire layout. We put the machinery in the places where the students said they wanted it. If you want to see some proud boys, you should meet that class of 18 boys in horticulture who did all that work -- it's their shop.

The farm is an interest area class. What better way can you teach science than to take a kid out where he can learn by experimenting. If you want to talk about trees, we have trees on the farm. If you want to talk about what fertilizer does to the field, go out in the field and fertilize one part and not another --let them find out. They also learn a lot of lessons in-between.

The board of education decided that during the summer we ought to do something with this 76-acre farm. So, they invite the fourth, fifth, and sixth grade students of Warren to grow gardens out there. They charge a dollar for the seeds and run school buses out there every day. Four teachers were hired to work there, and students from the horticulture class of Market High School volunteered to work, showing these youngsters how to care for the crops. Out of 18 students in the horticulture class, 14 worked on the project last summer, and they were very proud of their responsibility for showing others how to do things.

Now, about arithmetic in practical education: two years ago we had 1087 gardens on the farm. So, we said to the class that you will need about so-many corn seeds per foot, you will have so-many rows, so-many feet long in each garden and there will be 900 kids -- how much corn seed should we buy? They figured out all the seeds (corn, tomatoes, cucumbers, peppers, lettuce, radishes, carrots, etc.) needed for each elementary schooler's garden.

When the bulk seed came in, they weighed or counted out the seeds needed for each garden and put them in small coin envelopes. Then, they labeled the envelopes so they would be ready for the younger children.

The students went into the shop, a year ago, and made up 11,000 stakes for tomato plants, and then, they had to label each with proper rows and numbers so that each garden was identified.

(Production-Construction)

Another class we have in the ninth and tenth grade is called, production-construction. It is centered around wood shop. The students work in the shop four hours a day. Instead of going to academic classes, they go to shop.

We set up a beginning assembly line procedure and try to make articles in large numbers. One article, we made for awhile, was a cuttingboard made out of laminated strips of maple and walnut. One boy cut the strips. The next would run them through the planer. The next would glue the strips together. The next would unclamp them. The next would sand them. The next drilled a hole in the handle. Another would apply finish, and so on. Each boy did a different job, but he never stayed at the one job. We would move each one to a different portion of the production line every day, because we were not attempting to teach him any one skill. We were attempting to teach the most important thing we can teach these students and that is attitudes.

Attitude is our most important subject. Students had to learn that what they did on this assembly line determined what the fellow next to him could do; and his own was determined by what the fellow before him did.

We talked to people in industry and they said that the most important reason for persons losing jobs was inability to get along with fellow workers, or to accept orders of supervisors or bosses. How better can we teach these attitudes than under a set-up which shows what happens when you foul-up on your job.

The next problem arose after we had started producing the articles. What do you do with them?

Well, I stuck a couple of them under my arm one day, went down to the board of education and walked through some of the offices. Girls working in the offices said, "What lovely breadboards. Do you suppose you could get one for me?" I said, "Well, I think if you play your cards right, we can arrange it." (I happened to have a couple hundred of them out in the car at the time.) What we did was that we sold them for a few cents more than what they cost to produce.

The student in the production-construction class was given a grade for his work. The cost of the materials he used was paid for by selling the products, and the rest of the money was put in the shop accounts. The boys kept a record of how many hours each had worked on the projects and, at the end of the year, the profits were divided among the boys according to the number of hours each had worked on the project. They thought that this system was pretty good because they got a grade, their material was paid for, they didn't have to make something in the shop that their mother didn't want, and they made money.

Cooperative Occupational Training Program.

Our successes in the interest areas gave us courage so we decided that the next thing to do was to develop programs for getting these people working in real situations.

We talked to some of the vocational people in the state department and said, "We would like to put our eleventh graders in a T & I program." Columbus is something like 170 miles from Warren, but you could feel the ground shaking up in Warren when Bill Dunton mentioned the idea in Columbus. If you looked to the south, you could see heavy clouds rising, because that is about the reaction that occurred in Columbus. The reaction was that it was sacrilege to put slow students in these programs. Our superintendent, having a lot of intestinal fortitude, said, "Well fellows, too bad you don't want to go along with us, but we're going to do it anyway. We're going to start our own program for these kids."

We started out and put the eleventh graders to work in regular jobs in the community that we found for them. We took one of our teachers and put him in charge of the class. Since we couldn't use the name, T & I, for the class, we thought up a new name for it: we called it Cooperative Occupational Training Program.

We would find a local business or industry who would hire the student. We would bring the student into school for three hours in the morning so he could fulfill the requirements toward graduation (in eleventh grade it was U. S. History; in twelfth grade it was language arts.) The other two hours in school was spent in discussing problems about their jobs. You would be amazed at the things you can learn, and the things you can teach when students are discussing things about what happens to me.

One of the first boys to get a paycheck came to class and said to the teacher, "You know. This check shows me where my money went. I can understand federal income tax, and city income tax (because we have talked about them in class) but there's something on here marked FICA that I can't figure out -- and they took some of my money." You know, that inquiry was the start of a three-week discussion unit on social security -- starting way back at FDR and covering the whole bit. Today, these students fill out their own income tax forms in the Spring in the classroom.

Students are paid by the local industries for the jobs they do. They come to school for three hours, then go out on the job. Most of the jobs are in service-type occupations, because these are the jobs they are capable of handling -- service and production line type jobs.

I have here a listing of what has happened to these students this year -- a report of this year's earnings. In the eleventh grade classes: Willie Bruner worked at the Trumbull Memorial Hospital laundry; he earned $1,297.70. Cliff Hill worked for the Village Restaurant; he earned $1,036. Wayne Johnson worked for the City of Warren, he got $1,396.48.

We went to the city council and said that we would like them to hire some of these students and, after some inquiry, they passed a city ordinance. They are hiring our boys and girls in such places as: the waste water treatment plant, the city sanitation department, the city streets department, the water department, the light department and the city parks department.

Trumbull Memorial Hospital hired Don McMann. This is a boy who was hit by a car when he was seven years old and everything blanked-out on him. They had no idea what was going to happen to him, but he gradually came back. As far as we can tell now, he has about a 65 IQ. He worked this past year in the housekeeping department of the hospital and earned $735.45. He is a very conscientious worker.

Danny Warf worked for Warren Tire and earned $966 -- and so on down the line. Others work for the Burger-Chef, Newman's Fish Market, Republic Steel, Rainbow Lanes Bowling Alley, Saratoga Restaurant, etc.

Eighteen eleventh-graders earned a total of $17,229.53 for their own take-home pay.

We work with the students to help them manage their earnings -- budgeting and the whole bit. We have the students sign an agreement with us that they will save a certain percentage of their salaries. They will put the savings into a bank of their choosing and will make their own deposits -- once a month they show us their bankbooks. We had a real struggle with them at first, but let them get about $200 in the bank and you can't get them to take it out for anything. One of the boys who graduated this year had $2800 in his account. The whole class is proud of him. A couple of others had $2500. Several had $2000. There were seventeen twelfth-graders who worked 16,023 hours and earned $22,987.35.

The teacher who has the co-op students in class goes out to supervise them on the job. He may show up on their job any time, any day.

The employer agrees to become a trainer of the students. We select the employers very carefully. We thought when we started that we would eventually run out of job training sites. We thought that the first couple of years we would have students in jobs, then they would be hired to stay on the job and no spaces would be left. Actually, right now we have employers on waiting lists who want students. We found out that a boy, or girl, would work with one employer, become well trained, graduate and be hired full time by the same employer. Then, the employer would turn around and say, "Send me two more students." I don't know how it has happened that these people need more employees after our students are through, but we have been very pleased with the reaction.

We have worked with the Chamber of Commerce in introducing the program to some of the employers around town. They have been most cooperative.

Graduates Succeed.

A survey I made last March showed that 94.6 percent of our graduate students were working full time. Most of them had improved their positions from when they left school. Twenty-three of our students are in the armed forces (one is a cook on a nuclear submarine, three are in the Marine Corps, five are in the Navy, one is a Paratrooper, and the rest are in the Army).

Here is a clipping about one of our students which I tore out of the newspaper:

> Army Pfc. Robert J. Wilson, 20, son of Mr. and Mrs. Robert Ritchie has completed Rest and Relaxation Leave in Malaysia amidst his tour of combat duty near Hue, Vietnam. During the brief break, Wilson called greetings home.
>
> This 1966 Market High School graduate has been the recipient of three Purple Heart medals, and has been nominated for the Bronze Star.
>
> He suffered three wounds: one on his birthday in August and the latest on Thanksgiving.
>
> He is currently serving with the First Air Cavalry as a mortar-man and machine gunner.
>
> He is one of the few American servicemen to be awarded the Black Beret for valor by the Vietnamese government.
>
> He joined the Army in December of 1966, completed basic training at Ft. Benning, Georgia and underwent jungle training at Ft. Polk, Louisiana.
>
> His mother has received a letter of commendation from his commanding officer.
>
> Prior to enlistment, Wilson was employed by Joe's Auto Service in Warren.

When we graduate these students, the next question that arises is how do we sever the ties with school. So many of these students latch-on to the school as their one home base that they keep coming back. We do not discourage them! We are very happy to keep track of them.

The State of Ohio says that in order to graduate a student must have 16 Carnegie units: 3 in English, 3 in social studies, 1 in U.S. History, 1 must be Civics and Government, 1 in mathematics and 1 in science -- the remainder as approved by the board of education. We meet these requirements and so we grant a diploma. This diploma is exactly the same as that of any other high school.

Some of my friends in education tremble when I say that we grant regular diplomas. They say, "That isn't fair to the students in regular schools." I reply, "Why not?' If you stop and think a little bit, you can remember some students who went through regular high school who did not really earn a diploma. They sat in classes without creating problems long enough until the teacher said, "Well, he's a pretty good kid. He's never going to learn any more, so I'll give him a D and let him pass." If he keeps on getting D's long enough, he gets up to the senior year -- and he will get a diploma. The diploma, to me, means that the student has had enough courage to stick with the program long enough to get the paper.

In Ohio, at least around Warren, if you want to get a job in one of the steel mills, they will not accept an application unless you have a high school diploma. If the person says, "Yes, I have a diploma," they don't usually ask any more questions about the education. If they are interested in the level of the work that was done, they will request a transcript from the school. I will send it to them. We tell them exactly what the level of the work is -- and the company has been very happy to get our boys for the mill.

Mill officers came up to me in March, this year and requested 18 boys. They were trying to stockpile in anticipation of a coming strike and wanted some additional workers. We made the arrangements and gave them all 18 that they had asked for.

Market: A Continuing Organization.

At the close of school in June, we had 246 students in Market High School. We had to take seventh grade out and move it to another school where there was space. I am counting on 266 students at Market this September, plus another 70 in seventh grade in the other school. A bond levy has just been announced in Warren to build a new Market High School.

The question always comes up, "But, what about the prestige of this program?" It always comes as a shock to a parent to find out that his child is slower than normal. This is the big problem -- whether in a special school, a special class, or at home. The average parent does not want to face up to the problem.

I think that this viewpoint has a lot to do with us. I think it has been our fault in past history for not telling people that a mental defect is the same sort of thing as a physical defect in many ways. If you have a child born with a heart defect you teach him how to take care of himself, so he doesn't hurt himself. If you have a child born with

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a mental defect -- you hide it -- instead of teaching him how to get along. As a result, putting children into Market High School is a problem. I will not kid you.

As I told you, the first year at Market School we accepted students strictly on the volunteer basis. That was the last time we used this method.

In Ohio, the school superintendent is required to assign students to the schools within a city. So, our school psychologists group-test all the students in grade six. Any student who is at least 10 percent under average is individually tested using a Binet or Wechsler. These determine his IQ. These tests, plus a psychologist's interview with parents, plus teachers' recommendations from elementary school, plus the past records in elementary school, determine the students placement at Market. Students, thus assigned can go to no other school unless we recommend such a change.

The first couple of years this assignment to Market created a bit of a problem -- we don't have this problem any more. My only problem, now, is that I keep getting calls from people who want to know: if they move into Warren, can their children go to our school.

I had one woman, three years ago, who just ranted and raved -- you weren't going to put her daughter in that school for terrible kids and troublemakers. She was going to move out of town first. Our answer was that, if she moved out of town, it was no longer our jurisdiction. She moved into a neighboring community.

About January of that same year, I received a telephone call from her asking if she could come down and talk to me. I said, "We have an open-door policy here, you're always welcome." She came in and asked to look around the building -- she didn't tell me who she was. I told her she had two choices, "I will either give you a pass which says you may visit any classroom you wish, or I will take you on a tour and show you what is going on."

She asked me to show her around, and I took her through the rooms and showed her what the students were doing. Then, we came back to the office and sat down. I said: "Now, do you want to talk about it?" She said: "Yes," and identified herself. She said, "Would it be possible for me to get my daughter in here now?" I said, "If you live in Warren, she will be assigned here." She said, "We're going to move back next week because I want her to come here."

You know what they did to the girl at her present school? They put her in fourth grade -- she was an eighth grade student at the time. The other school system had no place for her, and she was operating at about the fourth grade level, so that's where they put her.

Extra-Curricular Activities.

We have a functioning student council.

We could not teach the students how to read music, but we can teach them how to play a bugle. So, we have a drum and bugle corps that serves as our marching band.

We use a large number of visual aids every day, and we have the students run the projectors and equipment.

We have visual aids club, a library assistant's club, an office assistant's club. We have a Booster's Club -- we have just about every kind of organization that you can imagine -- because this kind of student usually doesn't belong or participate in the school. We make this their school.

Last Spring, both of the other senior high schools of Warren had walk-outs involved with racial problems. Market High School which has about 60 percent negro students had no walk-out. I got talking to some of the kids one day, and I said, "Hey, tell me how come you kids aren't tearing this place apart like they are doing at the other schools?" One of the girls just looked at me and said, "What would we want to do that for?" I said, "I don't know -- they're doing it at the others." She said, "Yeah! That's different. This is our school. Nobody's going to mess up our school!" That was their reaction.

We did have one girl who made a sign, We Want Black Power, on a piece of note-book paper. She walked out into the hall and said, "Hey kids," and held it up. One of the other girls walked by and said, "Oh, shut up and go to class." That was as far as our demonstrations went.

We are very proud of our school. I think the greatest thing I ever did was to get into this business. Unfortunately, I'm hooked-together backwards, or something, because by graduation day -- by the end of graduation -- I have a soggy handkerchief.

A Senior Speaks.

I would like to take my last few minutes, before showing you a few slides and materials, to read the graduation speech written and given by a senior girl this June. This girl has a 76 IQ.

> Mrs Taylor, Dr. Monerly, reverend clergy, teachers, parents, students and honored guests.
>
> We graduating seniors are about to leave our wonderful years at Market to go on our way and to live in this strange world as adults.
>
> We have learned many things at Market. Some of them are: to respect the property of others and get along with our fellow students, and help them when they need help.

We can remember coming to Market as seventh graders -- frightened and suspicious about this strange new place. (Frightened is spelled, frighten; we didn't do a complete job, you see.) We asked questions about this school. We asked ourselves, "Why me?"

Most of our classmates went to another school and found new friends -- just as we did. We soon adjusted to this new and strange world.

At home we were told by our parents to always do our best in school.

At school we were encouraged and praised for our successes. Our successes came and we tended to forget why we were placed here.

Our teachers worked with us in all our classes. They gave us individual help and taught to help us solve the big problems that arise.

We soon learned to express ourselves better when talking with others because we knew our views were respected and considered -- not made fun of, set aside and forgotton.

We were taught to write more clearly and more completely.

We were encouraged to think before acting on our emotions.

These things were not done overnight. These teacher's teachings were learned and built-on. during our entire time. Surely, we will carry these teachings with us into adult life.

At the beginnings of our high school years we were taught the joys of working with our hands. The girls took courses in home economics, and the boys in industrial arts and vocational horticulture. Here, we learned the joys of building and making projects. We learned what it means to do a good job. Beyond our own satisfactions, we gained the respect of others.

Suddenly, at this time, we became aware of others, and our likes and dislikes, and why we feel as we do.

At this time many of us learned the joys of being of service, and also, the joys of participating in the school's activities: such as sports, magazine drives, dancing, yearbook staff, student council, drum and bugle corps and helping in the school office.

These experiences helped in shaping and molding our characters into something better than what we were when we came to Market.

Now as juniors and seniors, suddenly, we were being treated as men and women with responsibility of adults. At first it was wonderful, but then we started to find difficulties in living up to those responsibilities that come with adulthood.

The ones who go to core classes soon become aware that soon they will be expected to enter the field of work upon graduation. Here, they are being prepared to develop the right attitude toward work, and for work.

Some of us went to the work program. Jobs were located for us, and we dreamed of money and the luxuries that it can buy. These dreams were soon shattered because we began to realize how many hours of work a new dress or skirt can cost.

We learned to budget, to save, to bank, to pay taxes, and most of all, how and what it means to work.

We were made aware of the importance of being on time to work, regular attendance at work and what personal sacrifices had to be made to keep the jobs. An example of this is the necessity of working during week-ends for our employers, and what happens when you take off week-ends that you are scheduled to work. We also learned, rather sharply, that some of us are not suited for certain types of work and we must build on our own abilities, as much as possible, to perform in these jobs which suit our individual personalities.

We also find that, the better job you do for your employer, the higher the regard he has for you in his business, and the more value you are to his business.

These teachings are very difficult to learn because some of the ingredients it takes are: honest hard work, complete obedience, extreme courtesy and a whole lot of self-sacrifice.

With work, school and home obligations, our last two years were crowded at times -- and also nerve wracking -- but all this is to prepare us to meet and compete with today's complex society.

Market High School has done its job. We are not the scared, confused seventh graders of a few years ago. Today, we stand before you as young adults -- fully aware of what we are facing in today's living.

We have learned how important it is to understand and to be understood.

We know what it means to be creative, and to be of service to our fellow man, but we also know what it means and takes to hold a job.

We know we must grow each day to enrich our lives.

We know why we must develop those attitudes and behaviors that benefit society.

We know that there is dignity in honest work.

We know we must contribute to society, and depend on it, and finally, we know our responsibilities to home, school and community.

We, the graduates of Market High School, feel confident that we can, and will, meet today's problems with success. Our confidence comes from our repeated successes in solving life't problems while at Market High School.

Our problems are real problems for they dealt with us -- not some made-up person.

We learned to turn disappointment into victory.

We learned to work to our fullest potential.

We know no fairy-tales about life. When some fail, we shall succeed, and will endure.

Thank you.

THE RICHMOND PLAN AND DROPOUTS

Dr. Harry V. Kincaid, Senior Research Sociologist
Stanford Research Institute

I remember when Dr. Nelson asked me to join this meeting, and talk about preventing dropouts, that I told him pre-technical programs weren't designed to prevent dropouts. Being a very artful gentleman, he said, "Well, you better come here and straighten things out!" I do indeed feel that the Richmond pre-technical programs are not designed, specifically, to prevent dropouts. However, there have been recent developments in Santa Cruz County which have turned pre-technical programs in the direction of preventing dropouts. My immediate reaction to anything about dropouts is to flee. I have been avoiding research on dropouts for several years because of the ambiguities of data in the field. So, I agreed to give it a try anyway.

Nature of the Richmond Plan

First, I would like to settle some terminology. I will be talking, mainly, about the Richmond Plan rather than pre-technical programs. Some later history will help clarify this distinction. The Richmond Plan is an experiment from which has sprung a number of programs, including pre-tech and occupationally-oriented programs in food, health, construction industries , and so forth.

I think that my main justification for being here to tell about this program is that I am currently doing a fairly large-scale evaluation of the Richmond Plan in nine Northern California high schools. I believe it is necessary to tell you a little about the study before we get into the practical implications. I should warn you that we are still analysing the data; the final report is due at the end of August. Consequently, the analyses so far are provisional. However, I think that the conclusions I share with you will hold up pretty well.

Maybe I should start by telling you some of the things which the Richmond Plan is not. It is not a program solely to save dropouts. It is not a program for the disadvantaged student, nor is it designed for minority groups, specifically. It is not vocational training, per se.

Basically, the Richmond Plan attempts to fuse the vocational and the academic. I think that the heart of the plan is a major re-evaluation of the way principles and practices of programs are designed to meet the needs of the average student. If there is anything new about the Richmond Plan, it is in the interdisciplinary teaching team which is assembled to operate the program.

The team is usually composed of four teachers whose subject matter varies with the specific type of program. This is not team teaching in the usual sense. Richmond Plan teachers have their own classes, but they work as a team in planning for the courses. In addition, they are supposed to meet together several times a week to discuss issues and problems as they arise -- problems with students, and problems with curriculum.

Let me breathe a bit of life into this discussion, for those of you who are new to the idea, with an illustration of a unit which has been fairly successful in several schools. The unit is called the pin-hole camera unit. In a pre-tech program, where they have inter-disciplinary shop, science, math and English, students build the camera in shop. In science, the unit is picked up with instruction in such topics as diffraction and diffusion of light, and the chemistry of film exposure. In mathematics, the geometry of the camera is taught; and in English, they might stress the relevant vocabulary and prepare a report on the project.

About midway through this talk I'm going to show a rousing film that the Readers Digest people put out on the Richmond Plan, which will clear up any of the loose ends that I may have left here.

What are the objectives of the Richmond Plan? Well, we have found no generally stated concensus in the schools we've studied, or for that matter in the schools we didn't study. But after awhile, to our surprise, there appeared to be a concensus on the broad purposes behind the Richmond plan. These purposes were: 1. each student should accept responsibility for his own learning; 2. each student should show a definite change for the better in his attitude toward school and toward learning; 3. each student should see a reason for being in high school; 4. each student should feel that he has some say over what happens to him in high school; and 5. each student should develop more realistic educational and vocational goals.

Perspective for the Evaluation Project

Now, I'd like to try to put into perspective our project in the context of the whole Richmond plan movement. The Richmond Plan began in the late 1950's. It was begun by a group of educators in the San Francisco area who were concerned with the casualties of the college prep system which put primary emphasis on the transition from high school to college or university work. As they put it in some of their early writings, these average kids were underachieving, drifting with no apparent goal, performing poorly, and above all, didn't see much relationship between their experiences in high school and the real world.

Some of you may have seen an editorial in the Christian Science Monitor, July 31, by William Stringer. I think it's worth reading. It sort of gives me faith that the plan is on the right track. Stringer says: "One of the more deplorable notions that has gotten around these years is the belief that everyone must be a big achiever, must go to college, and must be a brain. A lot of people are not cut-out to be scholastically brilliant. The discipline of study is excellent, but some people are destined to labor through long years of frustrating experience trying to achieve via the popular ivy-encrusted college oriented route, when their individuality calls for something quite different." This is a very apt editorial, I think, for these days. Mr. Stringer thinks that the overemphasis on college prep began with Sputnik, and one would pretty much have to agree with him.

The educators, who originated this plan, were in the Richmond Unified School District. Their plans were put into effect in two schools in that district in September 1962. Something must have been very timely, because things really started happening. The publicity was enormous and the schools were swamped with requests for information, and with visitors. Other schools started adopting the program, and by 1965, 15 schools in the Bay area had implemented the program.

At that time (in 1965) there was a lot of sentiment that this was really a red-hot program; that it was working great; and that it should be spread nationwide, posthaste. But there was no evidence that it was working. I think that it was at this point that the Office of Education asked the Stanford Research Institute if they would be interested in trying an evaluation. Which we were; and we began our work in late 1966. Which means that we tried to evaluate this extremely complex thing three years after it had begun.

What were our objectives? We had two real simple-minded objectives: 1. how well is the program working, and 2. if it is working, what kind of information can we develop that would be useful to program planners, policy makers and educators who might want to investigate the Richmond plan or some variation of it?

Just a bit about our methodology. We have been living dangerously since we started. We observed no special rules about method. I think we have tried to adopt the stance of the natural historian as applied to the educational scene. We have tried to document, as an historian would, everything that happened. We have scooped up data wherever we can find it; relying, primarily, on depth of analysis rather than statistics. We carried the study out in nine Bay area high schools in which there were ten programs.

Possibly our most important source of information was obtained by observation of classes. This practice involved months of work just following the kids around; which, as you know, is invaluable in any evaluation. (You can't run around collecting information if you don't know what's going on in the classroom. Even when you observe, you're not entirely sure what's going on.) We did the standard questionnaire surveys. We selected comparison groups, so we could compare the Richmond Plan kids with a group that corresponded, as nearly as possible, to them in the same school. We surveyed the non-Richmond Plan or non-experimental, kids in each school to discover what information they had about the program and their attitudes toward it -- with the obvious end in view to see how this related to the actual success of the program. We did the same with the non-Richmond plan teachers in each school. All I can say in summary is that we are about smothered in data at this point, and we are attempting to fight our way through it to prepare the final report.

There are some obvious limitations to the study. We had no measures on the kids before they went into the program. It is much too early to tell the impact of such a program on the careers of high school kids. The earliest graduates have been out for three years now, and that is much too early for significant follow-up information. It is very popular these days to pin a dollar sign on educational programs, and this is another shortcoming of our study. We found it extremely difficult to put dollar signs on some of the benefits that we think resulted from the program.

I will not dwell too long on method. As a final note, we did surveys of all alumni of the program and their parents, to ask them in retrospect what they thought of the program and how useful it was.

Now, I would like to return briefly to the history and evolution of the experiment, because this now turns out to be data rather than background. An interesting thing is: why did it catch on? You know, there's really nothing revolutionary in it. It is reminiscent of some of the old vocational agriculture programs set up under the Smith-Hughes Act, where some subjects were taught in a special block of time. The old core curriculum is pretty closely related to the idea. What was essentially new was this cooperative team of teachers teaching interrelated subjects; this, apparently, had terrific appeal.

It was actually a little foundation out in San Francisco that finally got the thing off the ground. The innovating teachers were unable to convince their administration at the district level that they should proceed on the idea, but they got a grant from the Rosenberg Foundation (this gave it a lot of legitimacy and appeal) which allowed the teaching team to hold a workshop in the summer. They held one workshop in 1961, another was financed in 1962, and the program was started in two Richmond District high schools in the fall of 1962.

There were wild reports of its alleged success in Readers Digest and Saturday Evening Post. Local television stations produced 2 films on it. They pre-concluded that the program was wildly successful. I will show you the Readers Digest film a little later.

In 1963, the big money came in. The Ford Foundation came up with a grant to test the feasibility of the innovation by demonstrating it in eight additional Bay area high schools. The following year, another grant established the Center for Technological Education at San Francisco State College -- a very ambitious program and fairly well funded. The Center's objectives were to disseminate information to help introduce the program into more schools, to provide liaison between schools, and to set up an experimental teacher training program at San Francisco State with primary emphasis on Richmond Plan modes of teaching. This training program is currently underway; the second crop of student teachers have graduated and the results look very interesting.

The Richmond inter-disciplinary approach has been introduced into at least six other subject areas including food, business, graphic arts, medical and construction technology. We estimate there are something like 100 programs in various stages of development or preparation in California; and it has spread to Michigan, Massachusetts, Mississippi, New Jersey, Oregon, Wisconsin, Florida and New York. We have a tally of something like 1000 inquiries received by the Richmond district. So you can see that this idea seems to have been very, very timely.

Film Presentation

I would like to show you the Readers Digest film now. Following the film, I would like to discuss with you the question: "How well is the program working?" After that, I will try to draw some practical implications for educators and planners.

Resume': The Richmond Plan*

Not only are the tools of education under scrutiny but also, and more significantly, new contexts for the basic educational approach are being hammered out.

One such experiment to take the boredom out of learning began near San Francisco in the town of Richmond. The De Anza High School, there, pioneered a program that already shows such promise. Here's how it works.

In chemistry lab, the subject is electricity. Which liquids transmit it? How are the liquids themselves affected? What happens when metal rods are inserted? Which metals conduct electricity, and which don't? This doesn't look different from a normal high school chem class -- and it isn't -- but wait.

Now, we are in another room. The course is trigonometry -- but the subject is the same: electromotive forces and how they can be expressed through mathematical formulas.

In other words, the study theme is uninterrupted, and it continues uninterrupted in English class where the object is to write a lucid report on the characteristics of electricity flow. Suddenly, the student discovers the coherence of all forms of knowledge.

In machine shop, the problem is tackled from still another point of view. Here, the task is to build a transformer and test its application to electro-magnetic principles.

A connecting link between various learning areas is called the inter-disciplinary approach to education -- and it may be the start of a revolution in the American school system.

In the May Readers' Digest, this article revealed how many other high schools have adopted the Richmond Plan. How its success can be measured, and what experts say about its chances for becoming the standard throughout the United States.

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* Quoted with permission of The Readers Digest.

Teachers must meet several times a week to coordinate the pacing of subject matter of instruction. This makes the interdisciplinary technique expensive, because teacher time is the biggest single item in the cost of education. Also, teachers have to become students again -- they have to bone-up on each other's subject.

For the youngsters, the effect is sensational. Even during the lunch break conversation often turns to study. Interest in classwork has been aroused as never before.

Exceptional teachers are required. Often they have to unlearn much of what they have been taught in teachers' college. But, the most potent impact is on the student. They have a real reason for learning.

Authorities agree that, if the technical difficulties can be ironed out, the Richmond Plan may trigger a major revision in American education.

How Well is the Program Working

Now, I will try to answer the question that most people want the answer to: how well is the program working?

We are not entirely sure, but let me tell you what we do think we know about it. From the point of view of the current students in the Richmond programs we have studied, the program appears to be fair to good. (Current students are the students we were able to observe in classes and follow around to determine what they were doing for an entire school year. It happens that this observation took place last year, but we call them current students to avoid confusion with the alumni students.) Most of the current Richmond Plan students in all of the schools feel they received a great deal of personal benefit from the program -- they are highly satisfied with it, and they would take it over again if they had the chance. These kinds of data are what is called "counting the smiling faces" in Washington these days. You often hear that education is not in the business of making people happy. I would take exception to that; nevertheless, from this perspective, the current programs are working quite well.

As a rule of thumb, the data we are checking out goes something like this. Somewhere around a quarter to a third of the students seem to reap some fairly spectacular benefits from these programs. Some of the data that we haven't had a chance to put in usable form, yet, concerns sociometric evaluation of the Richmond Plan classes in which we have asked all the kids to rate the ones in their class that get the most out of the program, and the least out of it. I think that, when we put this data together, we will be able to explain a bit about why some students do get spectacular benefits. Maybe another third of the students going through the program get a reasonably good education, but nothing really outstanding. For the remaining third, or so, of the students, not much happens.

There was some interesting data obtained from comparisons of the Richmond Plan kids in the nine schools with the control groups. We asked all of the students to think back to their sophomore year and answer a whole battery of checklist-type questions. Then, after a series of unrelated questions, they were asked to answer the same checklist questions in the context of their current year.

Without exception, the Richmond kids benefitted more. They perceived a much greater interest on the part of the teacher than the comparison group kids. They were actually able to enjoy math and English to a greater extent than the control group. They improved their study habits; they got more individual attention from teachers. The Richmond kids got much greater enjoyment and a lot more interest in school, and were more willing to speak out in class.

The Richmond students showed a greater gain in grade-point average from sophomore to senior year than the comparison group. However, it will be necessary to qualify this a great deal because one of the tactics of experimental programs is to bring the kids along and, perhaps, give them grades they haven't earned. So, we cannot be too confident of that particular criterion.

We have data currently for only two of the schools on the alumni survey. The data we have showed that 49% of the Richmond students were in college and 37% of the control group were in college. More of the Richmond Plan students than their comparison group counterparts felt that they were well prepared by their high school education for college.

All of the teachers in the Richmond type programs felt that the kids were getting benefits from the program. The primary benefits they saw were, as follows, in rough order of importance. The Richmond kids get a better basic education; this is an interesting story which we make a lot of in our final report. The Richmond kids increased their motivation for school. They identify with a group. I might emphasize that the fact these kids go through four periods a day in a block results in some interesting group dynamics. For some kids, this chance to identify with a group is perhaps the first one they have had -- it can be truly spectacular to watch these kinds of kids open up. Many of these Richmond kids improve their social skills. We have good data on their behavior, before and after. Previously, many of them would not open their mouths if they were paid for it; you can't hardly shut them up once they get in a good program.

I might temper these somewhat optimistic comments by saying that there is an extremely wide variation among the ten programs we studied. Even in the very best ones, not all the kids are getting benefits out of it. There are some notable negative features in these Richmond type programs, too.

One of the most notable negative features is that of selling a group of candidates on the program -- on what they're going to get -- and then not paying off on it. This, in effect, takes a lot of kids who are sort-of losers and makes them even more losers. It's a desparate thing to watch. However, when you use a criterion of consistency on these data, everything seems to point to the conclusion that there's something good going on here.

There are some very interesting other impacts of this program, particularily on teachers. I will be talking a bit more about that later.

The preceding provides highlights of my attempt to answer the question of how well the program is working.

Implications for Program Planners

Let me talk about several major topics under the heading of the implications of the research.

What about pre-Richmond Plan investigation or exploration on the part of the school? We found starling evidence that schools will commit themselves to a program without the foggiest notion of what it's about. You have to be pretty lucky if you bring it off if you do that. Obviously, school people -- principals especially -- should know what the program can and cannot do. They should know something about cost -- which I will cover a bit later -- and talent. Some programs are foundering on the issue of costs.

In-service training of teachers and summer workshops are essential and the cost for provision of released time and prep periods can run from one to two man-years of salary.

Equipment doesn't seem to be a problem.

A most important problem, and one emphasised over and over again in textbooks on educational administration, is that of laying the groundwork for a climate of change. Principals should discuss with their people (the vice-principals, counselors and teachers) proposed changes. This is extremely important -- and often overlooked. Involvement allows the teacher to step forward and make the program his own.

Status is another problem. The invidious comparison between college prep programs and everything else -- which is necessarily second-rate. This negative viewpoint of parents, kids and teachers is a severe problem that is really hard to over-estimate. One of the schools we studied licked their status problem. We are trying to find out why. But, that is the only school which has succeeded.

Interestingly enough, the status problem is mostly in the minds of the Richmond program kids. When you ask the non-experimental kids in the same school, you find high degrees of difference in how the program is rated. The general student body tends to think it is a good program -- a prestige program. The kids in the program tend to think of it as a dumping ground. So much for status. I'm sure you are aware of it in vocational education.

Student selection is critical. The best program had a very cooperative group doing the selection -- composed of counselors and teachers. Where this doesn't happen, you can look for trouble. In the two best programs, the counselor was really a member of the team. He met with them, and took an interest in the program. It worked very well.

We went into curriculum thinking that this inter-relationship of subject matter was of critical importance, and that it should be done 100 percent of the time. This is impossible. Teachers can break their necks trying to make correlations between units like math and English. The kids sense a phony relationship a mile away, and it just doesn't work. Somewhere around 50 percent of a typical pre-tech program can be correlated: that would be shop, math, science and English.

Now, what about the teachers? We have some data on this. We had about 60 teachers. We used intensive tape-recorded interviews, and have somewhere around 2500 pages of copy; consequently, we have very good information on the teacher-variable. What characteristics are needed for effective Richmond type teaching? The most frequently mentioned were: the ability to be loose and flexible, the ability to reexamine and re-structure your own values about a subject matter -- like mathematics or English.

Another very important thing is the issue of group dynamics. When you get students together for four periods a day; give them a good program and a feeling that they have some say about what is going on -- a feeling that someone is really paying some attention to them; give them a feeling of dignity; and you get enormous releases of energy that can ruin teachers. I don't know if you can imagine the bedlam.

Typically, pre-tech Richmond classes are hard on teachers. They wonder why in the world they ever got into it. One said, "I never was called by my first name in all my life. I ran tight classes. Now, their only question is should I call him Van or Ivan" -- but, he appeared to be enjoying it all. (He also said that he is taking tranquillizers for the first time in his life.)

Something happens when you get these kids together who are on the fringe of the loser classification and give them some success. Lots of things happen. So, the teacher has to have a high tolerance for this highly-charged group. In the schools we studied, it was a rare occasion for a teacher to drop out of the program from discontent. A lot of the teachers seemed to have captured the enthusiam of their students -- or maybe it is the other way around.

One superintendent of a large district (and I think, a wise man) said, "The factor accounting for continuing teacher interest in the Richmond Plan is the reawakening of the very real interest in children that originally led some of them to teaching. Through years of repetitious teaching and monotonous classroom experience, they had lost the original spark. Along comes this innovation, and its fresh new approach to teaching, and they recapture some of that original dedication and enthusiasm." This makes sense in terms of our knowledge of these programs.

Conclusions

I think our evidence indicates that the Richmond Plan, in many of its variations, has the potential for desirable changes in secondary education. It is certainly breaking down some traditional barriers.

There are a great number of very strong forces against pre-tech programs. The three biggest ones are cost, the status problem and problems of breaking with tradition.

It is hard to get a teaching team together and make it survive. We have observed that minor friction on a teaching team can lead to serious disputes. Members of the team tend to be highly charged-up, they are highly visible in the school situation -- and often not really rewarded for doing this experimental thing. So, you can get some strong feelings in the teaching team.

The third major conclusion is that the Richmond Plan concept is diffusing rapidly in a number of forms. It is apparently working with students other than the capable average kids for whom the Richmond Plan was developed.

I started out by saying that the Richmond Plan program was not designed for drop-outs -- and it wasn't; but, there is such a program at Santa Cruz County that will start this fall. This got under way almost by accident. This little school of 600 to 700 students will have two on-going Richmond programs. One started in the Fall; now, this one. They are turning the school unside-down.

The idea for the new program developed with the civics instructor. All of last year he had observed the Richmond students in his classes, and liked what he saw. He was impressed enough to ask how could he do something. So, he started collaborating with an English teacher, and they came up with this new idea. (I should mention that the real germ of the idea came after the junior test in English and Math when about 50 kids failed both.) They selected about 30 of the real hard-core losers, and together, they will give them the senior program. It is an inter-disciplinary program in math, civics and English.

Just to show you how well planned it was, the Civics teacher broached the idea to the principal. He looked at the schedule and saw that these three teachers had a common conference period. He said; "How about it?" and the program started out.

The primary goal of this program is to motivate students to remain in school. It does not make any special demands on the school system: no funding, no released time for meetings. An outline of this program will be avilable at the conclusion of this presentation.

I think that what we have observed in Richmond programs -- and we have looked at all we could find from coast to coast -- is the crude beginnings of a possibly significant development. The long-term survival of the plan is in some question. However, if alternatives or adaptations of the plan can be developed which lick the problems of status, cost and break with tradition, it may survive -- it may fool us.

Finally, I think that people who talk about educational programs always arrive at the conclusion that something needs to be done about teacher training. This viewpoint is nowhere more true than in the Richmond Plan program.

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SENIOR INTERDISCIPLINARY PROGRAM:

MATH-CIVICS-ENGLISH

A new program for seniors will be introduced at S.L.V.H.S. to begin September 1968. It will be an interdisciplinary approach to Civics, Senior Math and Senior English. The program will be for the typical below average or below grade level student who is not succeeding and could possibly not complete his senior year. By fusing the three subjects, the student will see the practical aspects of education with each course reinforcing the other.

Philosophy and Goals for the Program

I. Motivate students so they will remain in school and become a productive member of society.

II. Develop practical applications of everyday living in civics.

III. Develop a proficiency in practical applications of oral and written communications.

IV. Develop a proficiency in practical applications of math.

V. Gain a knowledge of the historical past to understand the present and future problems.

VI. Gain a broader interest in national economic issues facing or that have faced the nation. (Capitalism)

VII. Develop a useful knowledge of available source materials and their application to everyday problems so that freedom of choice may be utilized.
(Ex. Consumer's Report, Congressional Quarterly)

CIVICS	MATH	ENGLISH
UNIT I. ADVERTISING		
A. Why advertise? B. What is an advertisement? C. Who advertises? D. Placing Ads E. Climate of store F. Customer relations Read Hidden Persuaders to correspond to the above	A. General math review* adding, subtracting, multiply, divide, fractions, percents B. Newspaper ad comparisons 1. Grocery ads 2. Clothing ads 3. Household items C. Compare regular ads to non-advertising ads 1. Initial cost 2. Length of service 3. Overall usefulness * To be continued throughout the year.	A. Study skills B. Appearance and form of written work C. How to use a library D. Review the following tools 1. Newspapers (how to use bias) 2. How to use almanacs 3. " " " magazines 4. " " " readers guide 5. " " " encyclopedias E. Compare non-advertising magazines to advertising magazines F. English 2600* G. Critiques on Hidden Persuaders* H. Vocabulary study (words from civics and math teachers and general vocabulary and spelling)* I. How to use yellow pages in a phone book J. Composition skills* * To be continued throughout the year.

CIVICS	MATH	ENGLISH
UNIT II. HOW DOES THE GOVERNMENT AFFECT THE PEOPLE		
A. The government and the constitution B. Bill of Rights C. Powers of Congress	A. Review general math B. Survey charts C. Interputation of surveys D. Criteria for Governmental polls in relation to election	A. Research on presidential candidates 1. Choose one and give written reasons. 2. Convince your reader that he is the best candidate. B. Powers of the press to influence in political elections C. Research paper form D. 50 Great Short Stories
UNIT III. COSTS OF GOVERNMENT		
A. Deficit spending B. Welfare C. Government Spending D. Foreign Aid E. Military F. Education G. Public improvements H. Farm subsidies I. Administration & Organization	A. Taxes 1. Cost of each area 2. How they are collected 3. How are they spent 4. Total taxes collected 5. Percent spent on each B. Units of measure 1. Standard lengths 2. Bulk 3. Liquids 4. Yardage 5. Metric system C. Gasoline taxes and their use 1. Study costs of roads, bridges, and clover leafs	A. Measurement Vocabulary 1. metric system 2. roots B. Selected readings from the required list 1. Read 2. Discuss re: a. government b. social aspects c. natural resources 3. Written assignments 4. Oral reports concerning the above

CIVICS	MATH	ENGLISH
UNIT IV. BUSINESS SKILLS		
A. Application Interviews B. Unions 1. History 2. Current union affairs 3. Government controls C. Government controls on employment (18 year old law) D. Occupations 1. What are your desires (work) 2. What are the requirements for that work 3. What are the benefits (enjoyment, pay, fringe benefits, retirement)	A. Employment Economics 1. Salaries 2. Benefits 3. Retirement 4. Advancements B. On the job skills 1. Sales tags & receipts 2. Using tax tables (sales) 3. Business machines (calculators, cash registers) 4. Making change	A. Application Forms B. Letter Writing* C. Interview and survey of job fields D. Job resumes E. Opportunities * Letters to Internal Revenue for all forms used - to be used in unit five
UNIT V. THE FAMILY AS AN ECONOMIC UNIT		
A. Formation of the family 1. Set up reasoning for partners 2. Occupations 3. Living styles 4. Role in society 5. Kinds of desires B. Family Economics 1. Budget 2. Credit Buying 3. Investments & retirements	A. What will you purchase? 1. Build 2. Insurance 3. Auto 4. Investments B. Build a budget and balance	A. Formal report on the family unit from math and civics 1. Periodic reports on progress 2. Apply for 2 jobs and report (orally) on procedure required 3. Final report on all phases of family units (cover all topics)

CIVICS	MATH	ENGLISH
UNIT V. (Cont.)		
4. Interests 5. Population problems C. Buying an auto 1. What are your transportation needs and desires? 2. What make or style do you want? 3. How much can you afford to spend? 4. Where will you buy? Why?	C. Writing checks and balancing a check book D. Payroll deductions E. Taxes - real estate & income F. Retirement G. Investments H. Interests	B. Interpretation of the following: 1. Insurance forms 2. Policies 3. Tax forms 4. Investments C. Written report on buying an auto (cover topics researched in civic)
UNIT VI. PLANNING A VACATION		
A. Where to go 1. Use maps 2. Natural resources 3. Depletion problems 4. Pollution 5. Redwoods 6. Parks & recreation areas	A. What is the cost of the vacation? 1. Modes of travel 2. Housing 3. Food 4. Entertainment 5. Equipment 6. Clothes 7. Overseas	A. Where to go 1. Letters to state parks, recreation departments and chambers of commerce asking for information 2. Oral reports on research done in civics on where to go 3. Student selected novels from reading lists - oral book reports

A TRAINING PROGRAM FOR A NEW TECHNOLOGY

Dr. Edmund P. Garvey, President and
Mr. John Bugbee, Assistant Professor, BMET
Springfield Technical Community College (Mass.)

We are prone to accept the things that we do every day in school as meeting the demands of a society that has moved at a tremendous pace during the last twenty years. Yet, we are faced with, as Grant Venn says, a situation in the history of our nation where education, as never before, stands squarely between man and his job. This means that the uneducated will have to be supported by those who have the ambition, and develop the wherewithal, to meet more stringent demands for employment in business and industry.

We have in this great nation today some unemployment. We hear that the current unemployment rate is 3.8 percent, but far too few of us realize that teenage unemployment is passing the 25 percent level. Not many people realize that one out of every six white children, and one out of every three Negro children are unemployed. While these people are anxious and willing, it is beyond their ability, in view of their home situations or educational backgrounds, to get the education they need for adequate employment. They become frustrated, they cause trouble and they leave the educational system. Yet basically, boys and girls have quite similar life goals.

So, here is the dilemma we are in. On one side, we have some two or three million jobs unfilled, and on the other, unemployed individuals who do not have the technical skills needed to fill the jobs. Industry is being stymied. The total work force is expected to increase to twenty-one million people by 1970. The gross national product is going up and up. Yet, education is not beginning to meet the demands for the better society we talk about.

How Are We Fulfilling the Needs?

I think that many of us in vocational education feel that we are meeting the demands of industry. Now, I don't know whether this is true in other states, but a very excellent report was prepared on the Pittsburgh system here in Pennsylvania that parallels, very closely, what I have found in Massachusetts. We talk about Massachusetts as being the citadel of education. In the reflection of Harvard and early public education, we have the reputation of having a very fine educational system. Actually, I don't believe that it is any different from that in any other state--after looking over the statistics.

Last year, the high schools in the Commonwealth graduated 65,000 students. Of these, 19,000 entered baccalaureate degree granting institutions and another 15,000 went on the post-secondary education; that is, schools of nursing, community colleges, and so on. But 30,000 (mind you--this does not consider dropouts or graduates of private and parochial schools)finished their formal education in our state last year without the necessary skills needed to enter industry.

Now our vocational people in Massachusetts brag, and I don't know whether we're right or not, that vocational education started in the city of Northampton--where Dr. Alexander Graham Bell invented the first telephone--some 60 years ago. Yet, we are still serving only about 15% of the students in the Commonwealth. We are graduating from the vocational schools about 3,000 people. Of this 3000, 1000 are trained in Home Ec. and Agriculture which, I think you will agree, have nothing to do with the demands of industry. So, out of the 65,000 in the Commonwealth that graduated from our high schools, some 30,000 did not have the wherewithal to enter industry, and the vocational schools really produced only 2,000 who could.

We have fifty-two vocational schools in the Commonwealth. Three of these schools, in Boston, Springfield and Worcester, produced almost eleven hundred of the 2,000 graduates. You can see that the number of the students made available to industry by the remaining schools was practically nil. It seems to me that the big problem is for vocational educators to make up their minds that about 50 percent of the school graduates of our state should be in a vocational education program.

You know only too well, of course, the stigma attached to vocational education, and the problem of changing that. Let me tell you how we got around this problem and then, later on this morning, you will hear another man from Massachusetts discuss an entirely different approach from the one we use.

Some fifteen years ago, if I remember the statistics, a doctor needed three support personnel. At the present time, he needs thirteen--and with Medicare, the number will go up to twenty. In the United States, we have a shortage of one million support personnel (this is Willard Wirtz's latest figure), and yet, our vocational schools have practically not touched the field of health service programs.

In the past, we thought that we had done a fine job at our Springfield Technical School. We had developed some fine programs in the paramedical health field and thought we were leading the nation. I think, probably, we were for awhile; but recently, we have seen brochures from other states--North Carolina, Georgia, Wisconsin and many other parts of the country--which are actually topping us.

At the time, we were convinced that we couldn't improve or enlarge our offerings with the existing facilities. With roughly 2000 day students and about 8000 evening students, we had devoted as much as we could to the paramedical fields. However, events occurred which have made expansion possible.

Development of Springfield Technical Community College

In 1967 the Department of Defense decided to close the Springfield Arsenal. Since this action meant the loss of a twenty-two million dollar payroll, the mayor, at the suggestion of the Department of Defense, appointed a committee to study the situation and determine what could be done.

The first thought of the committee was to get industry to locate on the arsenal site. Invariably, following visitations and discussion of the things the community would do to help finance their establishment, the industry people say: "You have a nice community, lovely churches and museums, but actually, your natural resources are no better than they are in the South. What we want to know is where do we get skilled help?"

Our first reply was that there were 2200 people, or more, available who had been employed at the arsenal. When they found out that the average age of these people was 55, they just couldn't see any future in starting out with these people.

Finally, we did manage to get the General Electric Company to locate their defense electronics plant on one plot of the armory. About the same time, the Economic Development Administration came and made a $35,000 study of the Connecticut Valley--since the whole area was losing industry. A major recommendation of the study group was the development of a technical institute to train workers.

The mayor was quick to remind them that we already had a technical institute--and a good one; but the study indicated that it wasn't good enough. The study indicated that an institute capable of handling 5000 students was needed: our enrollment at the time was 500 technical and 1500 vocational students.

The study indicated that, if we could attract 15 percent of the high school graduates within a 25 mile radius, we could easily have the 5000 student enrollment by 1970. If we accepted this suggestion, the government would turn over to us a large part of the arsenal site for a campus. As a result, the Springfield Technical Community College has a 15 million dollar campus in the heart of the city--this is comparable to allocating half of Central Park in New York City for a vocational school. We moved in last year. We are not completely settled, but we are in business.

With the new facility, we felt that we could develop many of the courses we had been asked to add for some time. The one we will discuss in detail at this meeting, bio-medical equipment technician, was one of these programs.

Origins of the BMET Program

The rationale for the bio-medical equipment technician program was based upon several factors. Foremost among these was a need defined by local hospitals for people to service the medical equipment they were using. We found many cases of hospitals where a whole storeroom was filled with valuable equipment awaiting service by company service representatives. Because of this situation, the hospitals felt that our school, with its electronics programs, could move into the medical instrumentation field. So, we began to consider the possibility of innovation to meet this new need.

As a first step, we wrote to the Association for the Advancement of Medical Instrumentation for their opinion on such a program. They encouraged us to go into the field.

Next, we discussed the need for such a program with hospital people in the Boston area. We found that many hospitals were operating programs on their own: Massachusetts General Hospital was training classes of 20 students. From this study, the existance of such an employment opportunity was evident.

As we got on with the question of whether we should offer a program in what we were then calling, medical electronics, we began to realize the real nature of the program. It was a marriage of medicine and engineering involving several disciplines. The matter of writing curriculum would require serious effort and study--and we realized that we did not have the ability to do this task ourselves.

About this time two MIT graduates, friends of mine, decided they wanted to go into curriculum research. They came to me with a proposal for a research program in math and science. I said to them: "My God! Don't bother me with such nonsense. Everybody is doing research on math and science: down at HEW these reports go right up to the ceiling. Why don't you get into a field where there is really a need?" They were somewhat perturbed at my abruptness, but they asked what I thought they should go into. As a result, they decided to look into the field of medical instrumentation.

Once the direction had been decided, we requested a grant from the Office of Education and were provided $35,000 for a preliminary study.

Organization of TERC

About this time, a group of educators met to discuss problems of leadership in technical institute and community college education. All of them had the same complaint: how do we develop adequate curriculums for emerging technical occupations. The final result of this deliberation was the formation of the non-profit organization, TERC (Technical Education Research Center).

The two men who had come to me earlier to discuss curriculum research, Arthur Nelson and Bruce Boal, were elected to head the organization with an office located in Cambridge.

The first task of TERC was to complete Phase I of the BMET project and initiate Phases II and III. Other projects include: electro-mechanical technology under Dr. Roney at Oklahoma State University and Dr. Roy Dugger in Texas; nucleur technology at Lowell Technical Institute; and laser technology.

TERC now has branches in Washington, D.C. under Mary Ellis; and in Dallas, Texas under Dr. Dugger.

Development Of Generalizable Educational Programs In Bio-Medical Equipment Technology

The development of a curriculum that can be used to train broadly employable technicians in the area of bio-medical equipment technology has been divided into three phases by the staff of the Technical Education Research Center. The three phases are: (1) Documentation Phase, during which a field study is conducted with the purpose of gathering data relative to the need and occupational specifications of the technician; (2) Curriculum Development Phase, during which a preliminary curriculum is trial tested and revised; and (3) A Program Extension Phase, during which the curriculum materials that were revised during Phase II are disseminated and comparative data are gathered for the purpose of demonstrating the relative effectiveness of the materials. We are currently in the second phase of the BMET study. In addition, we are entering a second phase with respect to the training of technicians in the field of Electro-mechanical equipment technology, a first phase for the development of a curriculum for nucleur—medical technicians, and a first phase for the development of a curriculum for laser-optical technicians. This paper discusses only the curriculum development for the BMET, but the procedures and techniques described here are being developed into a general plan for programs of this nature.

Before I go into a detailed description of the curriculum development for the BMET, let me spend a few moments telling you about our organization. Technical Education Research Center, known to its friends as TERC, is a non-profit organization whose general objective is the conduct of research in technical education especially with regard to emerging technologies. To date, our sole source of support has been from the U.S. Office of Education, but in general, our aim is to provide research services in technical education and to be supported by those foundations and agencies who have interest in those services. Currently, those services have taken the form of developing curricula although there are proposals being negotiated on a broader scale.

By way of example of a service that TERC can provide which is not strictly curriculum development, I would like to mention a compilation of a resource material or "Data Bank" in the field of bio-medical equipment that is being accomplished through the joint effort of AAMI and TERC. It is our expectation that we will have extensive and readily available data with regard to the sources of material and services that can be utilized by people in the field of bio-medical equipment on a nationwide basis. The information includes lectures, films, manuals, training materials and equipment sources and, of course, has obvious implication in the dissemination of curricular materials that are developed at TERC, particularly with respect to the implementation of the curriculum in the different contexts for the regions of the United States. In addition, this information can be used as a base for developing certain growth statistics in the field and, thereby, being able to more accurately predict the occupational prerequisites for the BMET.

TERC was alerted to the need for technicians to service and maintain bio-medical equipment through conversations with people in the field including doctors, hospital administrators and members of AAMI. In our Phase I proposal, we outlined a task including the documentation of a need for the technicians and a compilation of data which could serve as a basis for devising the preliminary curriculum. In executing this proposal, we identified three sources of data; hospitals, research institutes and manufacturers. Our budget limited us to the New England and Mid-Atlantic regions but we performed a careful selection and analysis of this sources of information. The details of the selection process, the interviewing of those selected and the analysis of the data thus collected, can be obtained by writing TERC at 142 Mt. Auburn Street, Cambridge, Massachusetts, 02138, and requesting either a copy of the summary report or the full report of Phase I.

Analysis of the data gathered in Phase I supported a need for between 3200 and 3700 BMET's in the regions studied. These figures can be rather loosely extrapolated to approximately 10,000 on a nation-wide basis by 1970. We found that approximately two-thirds of the BMET's would be needed by the manufacturers, whereas, one-fourth of the need would be in the research institutes and only one-tenth of the need would be in the hospitals. This distribution may be somewhat of a surprise to you, as it was to some of us, in that you may have expected a larger proportion of the need for BMET's to be expressed by hospital administrators. Those of the TERC staff who share this opinion have suggested that the data simply expressed the degree to which the hospital administrators are unaware of the impending growth of the use of sophisticated bio-medical equipment in their hospitals, and in addition, they have not been convinced that hiring technicians to service and maintain the equipment on the premises can have certain economic advantages. The resource data that I described previously may provide documentation with regard to the use of BMET's in the hospital. In this way we may be able to perform an educational service to the hospital administrator.

On the basis of the data we gathered in our interviews, we were able to identify four types of BMET. The first three types would be distinguished by a relative level of sophistication in the tasks that they performed and by a degree of supervision that would be provided by professional staff members. There is also a concomitant difference in the salary expectations. The lowest level of BMET would be supervised by the production manager of a manufacturer or the chief engineer of a hospital, would do rudimentary service and maintenance and would be paid approximately $6800. The third level of technician would be almost exclusively supervised by professionals, do a relatively high level of work, including design and modification of equipment, and could expect approximately $8400 per year. The second level of technician would be fairly well defined as a mid-point between the first and third level although the supervisor would be the service manager or a professional and the salary expectation would be approximately $7400 per year. The fourth type of BMET would be sales-oriented, service type under the supervision of a sales manager and would expect about $9000 per year. Over two-thirds of the need for BMET's in 1970 would be in the first two levels of the technician with less than a quarter of the need in the third level and approximate five per cent need for the sales/service type. Some of you may be surprised by the fact that the BMET may be found in the production line and thereby under the supervision of a production manager. Some of the members of our staff discount this finding and suggest that the people we interviewed were not fully aware of the level of competence of the technician being trained. There seems to be some agreement that perhaps a proportion of our technicians may enter a given manufacturer at the production line level and thereby be supervised by a production manager but this would be simply for the purposes of training or job entry. The third phase of our study should be able to document where indeed the graduates of our program do go and we can modify our objectives on the basis of that information.

The field study also gathered information relative to the "knowledge and skill" requirements for the technician. While this information was admittedly non-professional from the educators' point of view, it did provide a realistic base from which decisions could be made. Several conferences of technical educators, doctors, engineers and manufacturers representatives were held to review the data gathered with respect to the training of the technician and a series of recommendations were formed. First, it was suggested that, in comparison to technicians that were currently being trained, a BMET is most like the electronics technician with an important component of instrumentation added to his capability. Next, it was suggested that a two-year program for the purpose of training the technicians should be viewed as a starting place in the total education of the technician; that in some cases, there would be continued on-the-job training and, in some cases, there would be a need for continued formal study leading to the baccalaureate and higher degrees. Thirdly, it was suggested that, in order to properly train technicians in two years, there is a pressing need to prepare highly integrated courses of study so that the duplication and wasted effort of fragmented courses can be kept to a minimum. With regard to this third recommendation, there are two corollary recommendations. One, that courses be developed that stressed practical application yet maintained enough conceptualization to sustain the technician in novel situations. Secondly, the concept of team-teaching was recommended for consideration so that open lines of communication among the instructors would enhance the integrated curriculum.

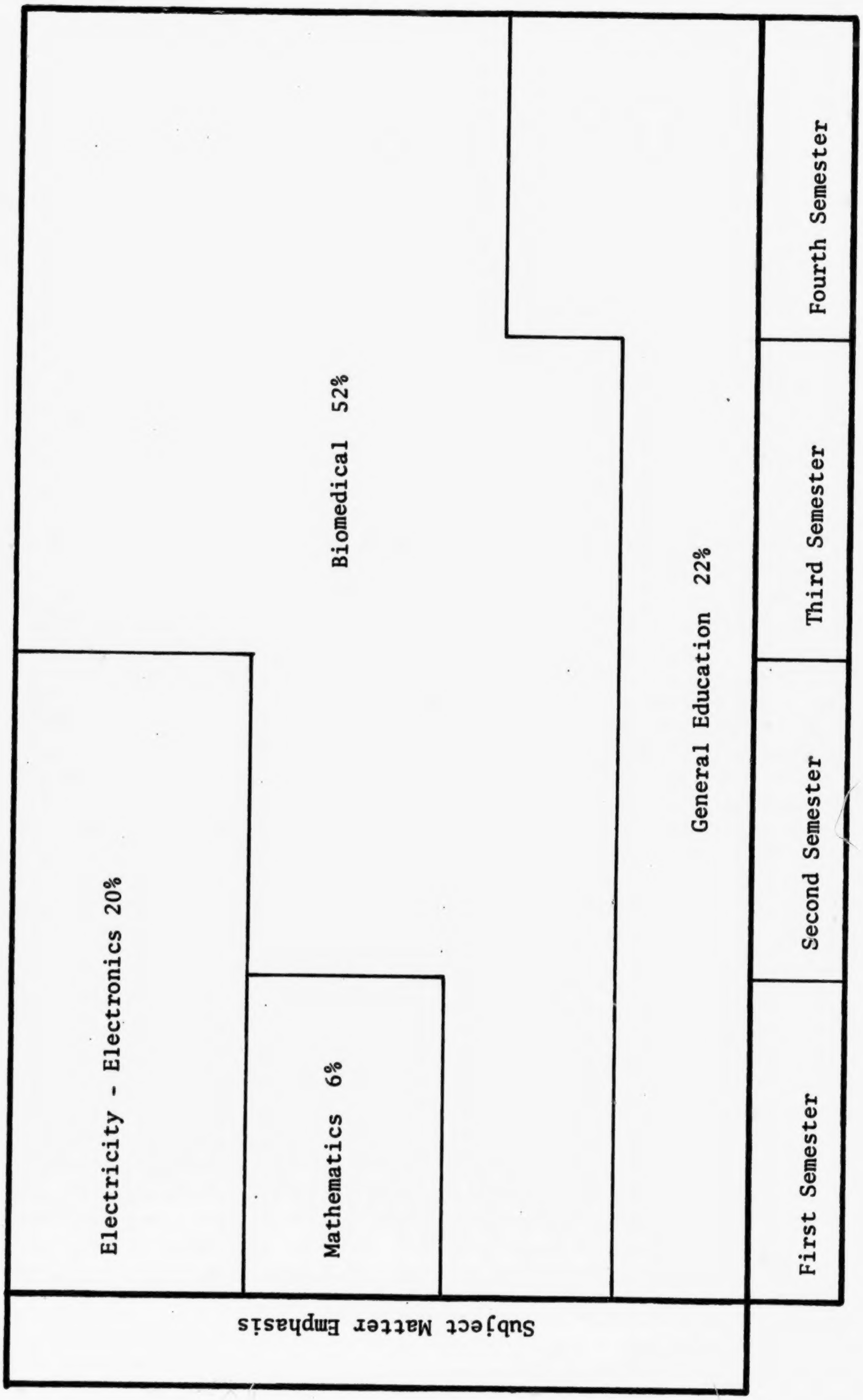
The overall structure of the curriculum was influenced by the work of Dr. Maurice Roney and his colleagues at Oklahoma State University. Dr. Roney distinguishes between two types of technical curricula. The chief difference between them is in the degree of emphasis on technical courses and the timing of the introduction of technical courses. In one type, the technical courses constitute a low proportion of time and they are concentrated in the latter stages of the student's training. In the other type there is a high proportion of technical courses and they are introduced in the first semester. In addition some of the science courses are designed to have direct relevance to the technical curriculum as compared to science courses that are designed to emphasize general principles.

In the curriculum for the BMET, we have distributed the courses as follows: 52% to the bio-medical courses, 6% to mathematics, 20% to electricity/electronics, and 22% to general education. It is our intent to introduce the bio-medical courses in the first semester and to incorporate into these courses those topics in physics and medical science that are necessary. (Note chart on the following page.)

We have completed nine months of the trial-testing of the curriculum and are currently in a revision period in preparation for next Fall. A team of technical institute teachers, who participated in the conferences that prepared the preliminary drafts of the curriculum, has formed the nucleus of the instructional staff for twenty students at the Springfield Technical Community College in Springfield, Massachusetts. Next Fall, these twenty students will begin their second year in the program and they will be joined by a new group of students who will begin their first year in the program and upon whom we will be able to test the revisions that we make this Summer.

As a further trial of the materials, there will be a group of students and teachers available in Waco, Texas, at the James Connally Technical Institute, who will begin a program in Bio-Medical Equipment Technology. This opportunity will provide comparative data with respect to students having different cultural backgrounds, learning in a different educational setting and participating in a trimester program. There will also be valuable information for TERC with regard to the implementation of a course tried in an institution different from the one in which it has been designed. This information not only will have ramifications for the development of the curriculum but will also provide some insight in the matter of teacher-training.

I might way a word about the direction that the revision of the materials has taken this summer. In our original plan to integrate the courses of study and to rely on a team effort among the instructors, we had expected to have each course contain some inportant aspect of the training of the BMET. It turns out that this is an enormous task because it meant, essentially, rewriting every course. We have currently retreated somewhat from that goal and have concentrated our efforts in writing the bio-medical courses using, whenever possible, standard courses that would require little or no adaptation but they could be easily modified to relate to the BMET curriculum. In using


Subject Matter Emphasis
Electricity - Electronics 20%
Mathematics 6%
Biomedical 52%
General Education 22%
First Semester
Second Semester
Third Semester
Fourth Semester

standard courses, we have prepared a suggested outline which sequenced and emphasized those topics that are normally taught in the standard courses in such a way that they would be most advantageous in the training of the BMET. This revision has the added advantage of providing for an uninitiated school a means by which they can adopt the program with less disruption to the overall program than if we presented the entire package. It is our expectation that we can provide the package but we will also have this alternative.

By August of 1970, we plan to have a fairly well-tested set of materials and courses available for a more extensive use on a national basis. These materials should consist of course outlines, labs, lab manuals, tests, bibliographies and a list of resources that are available to the school.

In phase three of the development of the curriculum for BMET's it will be our purpose to disseminate on a national basis the materials that are produced during Phase II. Since we anticipate considerable variance in the resources and objectives of the schools receiving the materials we feel that it will be necessary to offer assistance in modifying our materials.

A second purpose of Phase III will be to analyze the effectiveness of the graduates of our programs. This analysis will take the form of comparisons between the graduates and our expectations and comparisons between the graduates and technicians with differing training backgrounds. Phase III of the BMET study is, at present, in the proposal stage, but it is my expectation that even in the absence of funding some amount of its purposes will be achieved.

To summarize the development of the BMET curriculum, it has been TERC's design to objectively ascertain the need for the BMET and to characterize his functions and educational requirements; then, on the basis of this information, to devise, test and revise a curriculum which would prepare people to become technicians; and finally, to disseminate and modify the curriculum and to analyze its effectiveness.

Problems and Guidelines

I would like to talk briefly about some problems we have had at our school.

Student Selection.

First, we have to select students. Since this (BMET) program is going to be a national program we didn't want to skew the curve--we didn't want to get too many high IQ people, or low IQ people. So, in order to do this, we thought that the best vehicle was to ask for students who would be willing to participate in the program. From these, we selected twenty students--the lowest IQ was in the high 90's and the highest was 135; five students were over 125.

Five tests were given to these prospective students. The first was the Psychological Corporation Pre-Engineering Test. Also given were the GATBY, Edwards' s Personality Preference, Otis and Kuder. We are also, in addition to preparing curriculum, devising pre- and post-tests to determine whether, or not, we are achieving our specific goals and objectives.

Teacher Selection.

Now, there are three points which we feel are very important for this program to be successful.

The first, of course, is the selection of teachers. It is not every day that you can go out on the street and find a bio-medical engineer--which is what you need. You need someone who is familiar with the equipment; you need someone who is familiar with the applications. We are very fortunate in that we have a fellow from Northeastern College who is a graduate engineer and is also responsible for all the research equipment used at Brandis University. He is teaching the electronics coursework.

The teacher does not necessarily, have to be a Ph.D.; in fact, the person with a bachelor's degree and a great deal of experience will make the best teacher. The teacher must be able to relate to the BMET courses.

We are very fortunate in having an English Teacher who has a bachelor's degree in biology and a master's degree in technical report writing. This condition provides one answer where you wish to provide for course integration. Our students, for example, do not read the normal texts; they read such things as FANTASTIC VOYAGE, and get a lot of medical terminology this way.

The physics teacher we have is from one of the local colleges. He teaches at our school part-time and is an expert in optics. He is also designing take-home laboratories--another function of the project.

Equipment Selection.

The second problem is the selection of equipment; and also included with this is cooperation with local hospitals.

If you train a person, and the hospital will not hire him, there was no sense in training him.

As you know, medical equipment becomes obsolete so rapidly that it doesn't pay to buy it. What we have done is to make arrangements to buy specific basic units--for the rest we are trying to buy used equipment which utilizes common principles. Really esoteric types of equipment are brought to the school by manufacturers for display or loan purposes.

The equipment used in this course is very, very basic. If you compare an EKG machine with a color-television there isn't a great deal of difference--except that the EKG machine is attached to a human being (and other minor factors). The heart-lung machine is a very simple piece of equipment--it contains five pumps, a couple of filters, an aerator and a warmer.

We have developed a list of the equipment which any school that plans to inaugurate this course should have. It has been broken down in terms of application and purpose. Anyone who plans to begin a course can contact TERC to determine what is needed and ways to go about getting it most economically and practically.

Equipment can also be obtained on loan from hospitals. Where you aren't able to get a hospital to loan it, you might go to the hospital and use it there. Obviously, you cannot remove some of the equipment from a hospital. You have to be judicious in selection of equipment.

Integration of Coursework.

The third problem is integration of courses in the BMET program.

Initially, we have set up the courses so that, during the first year, the student gets all of the basic background material--math, physics, electronics and bio-med. After a while, we may find that we want to double-up courses, or use other teaching arrangements.

The system will be flexible. What we want to do is to prepare technicians and, if we find we have to do a great deal of modification, that is what we will do.

We do not want wasted effort. To help avoid this at Springfield, we have teachers provide weekly breakdowns of what they plan to do each week. Whenever possible, we try to integrate laboratories. When we deal with a topic, such as the circulatory system, an attempt is made to relate other subject material to this topic--for example: temperature, pressure or other affective factors. In another situation, if the physics teacher is planning to teach vectors, or levers, he can determine when the physiology teacher plans to teach the skeletal system and correlate his instruction. Once a week, we have staff meetings to discuss problems: problems of students, problems of instruction and so forth. There is a lot of interaction between the teachers--there has to be.

One criticism we have had of this program in our area is a concern for how much of the program a student can transfer. Everyone seems to be obsessed by the spector of transferability. We do not really care about this. We are training the student for a specific job--a job where the employer wants to know what the person will be able to do. If some of the courses are transferable, all the better; but you run into a problem of semantics which can defeat the whole purpose of the program. So, we are not too concerned about transferability.

Recently, we talked to Dr. Specter at New York Institute of Technology who was setting up a four-year program in BMET which will follow our pattern for the first two years then spend the next two years on theoretical problems and more esoteric coursework. Kids in our program will be able to transfer to this course. A program similar to the New York program is being started at Northeastern.

A centralized factor in our program is the seminar which meets for one hour a week. The purpose for the seminar is, primarily, to provide continued motivation of the student. It enables him to see precisely, how the physics, math, physiology, etcetera--the skills he is learning--can be employed. In addition, the use of large numbers of outside speakers is important to give the student insights into and perspective of the field. Speakers from hospitals and manufacturers, videotapes, and so forth, introduce students to equipment not available in school, and people in the field. These are experiences which the courses, alone, cannot possibly provide (note chart, following page).

Unrecognized Hospital Needs.

Another problem we have become involved with is the acceptance of the student by the hospitals in the area. The underlying basis of this problem is hospital personnels' misconception of their need for such people. In the first place, they often do not realize how much equipment they really have requiring electronic and mechanical service. Secondly, they fail to realize the savings in purchase-operations costs which may be gained by having trained maintenance personnel on their staffs--as well as individual problem service call costs.

Communication Requisites.

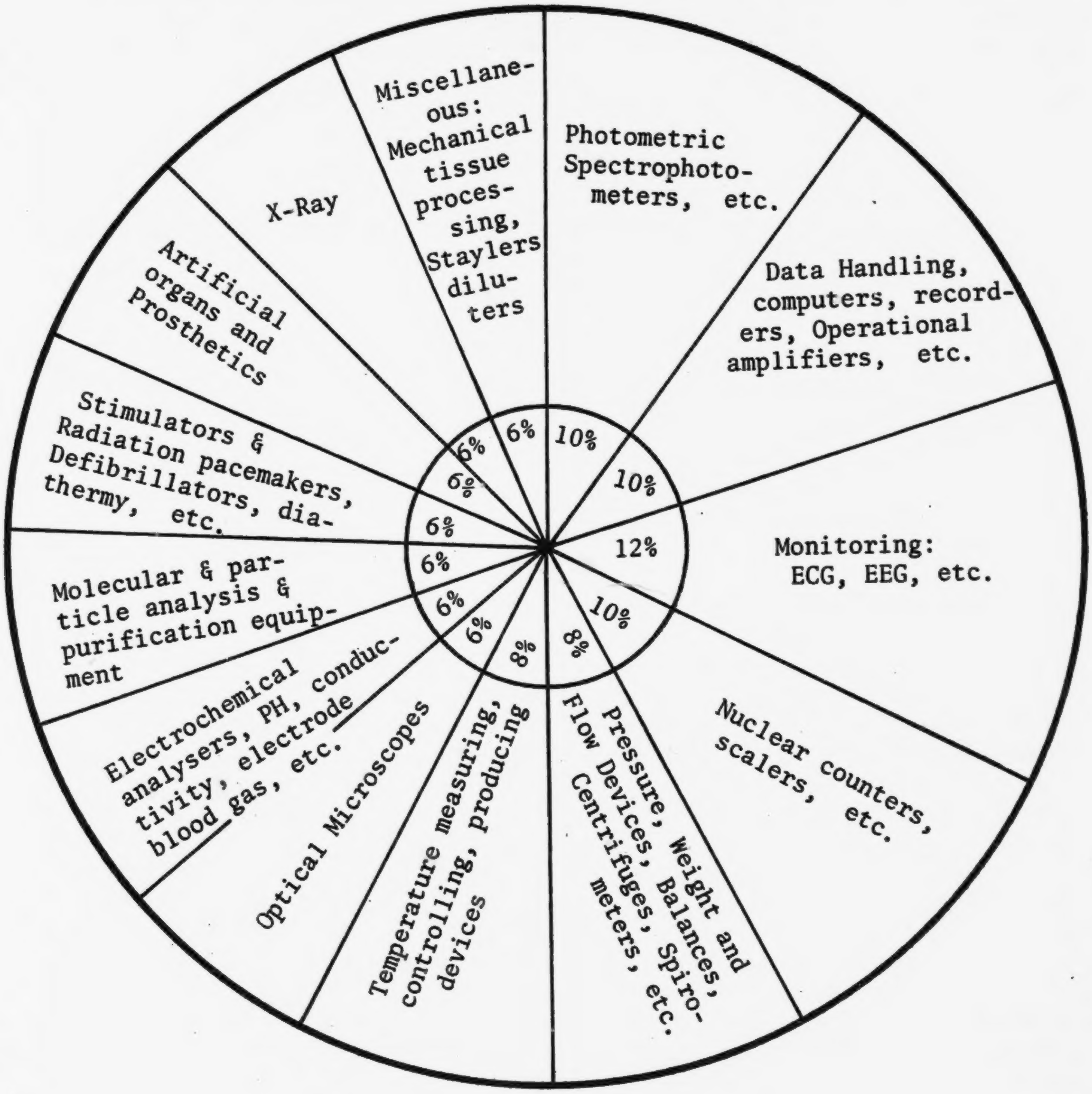
Another problem is terminology. Motivation is high, but the need study indicated the need for development of the ability to read and write cogently. Respondents said that 90 percent of the service problem is communication--one person does not understand what the other is talking about. The technician will be working with professional and semi-professional people--they must be able to understand him, and he must be able to understand them.

Medical Sanctioning.

Another problem is with standardization of qualifications. Every other paramedical profession has some sort of sanctioning body. This problem encompasses so many fields that it is difficult to identify a sanctioning body--it gets into the lab, cardiac monitoring, operating room, inhalation therapy, x-ray, and so forth. Which group is going to sanction the technician? I am sure that the Medical Technology group would like to get a hold of this program. Even though I belong to the organization, I must recognize that they are very picayune about specifications, in general.

SUGGESTED DISTRIBUTION OF BIO-MEDICAL SEMINAR TIME

The Bio-Med seminar is a lecture-demonstration on specific equipment. There is provision for one seminar per week. In a 4 semester system of 16 weeks per semester, this would allow for 64 seminars.



The purpose of the seminar is to give the students an exposure by lecture-demonstration to a wide variety of medical devices. They will not work with all these devices in the laboratory, but they should develop an approach to understanding and analyzing new equipment.

About six years ago, we started our laboratory assistant program. It was initiated on the basis of recognized community need--doctors and lab supervisors got together, said that the assistants were needed, and asked us to set-up the program. So we did. ASCT found out about this and set up their own sanctioning program, but excluded us. One of the reasons for this was an ASCT requirement which said that hospitals affiliated with a school of medical technology must have, at least, 500 beds--one hospital we were using had only 490 beds.

We think that the sanctioning body for the BMET program will be the AAMI (Association for the Advancement of Medical Instrumentation).

Precedent BMET Programs.

Prior to this program, two BMET programs, we know of, were underway: one in New York, and another, in Toronto, Canada. The program in New York has a woman teaching it who is, almost exclusively, a chemist. Her curriculum is almost all chemistry. The program in Canada is, almost exclusively, micro-biology. What micro-biology has to do with BMET, I do not know. These situations have helped us feel the need for some sort of standardized curriculum. Then, the BMET produced in Massachusetts can do the same job as one produced in Texas.

Responsibility.

Lastly, I want to point out some problems you get into when you relate to the medical profession.

There is a whole hierarchy built-in to the medical profession. The ASCT comes under the ASCP (American Society for Clinical Pathologists) which are MD's in charge of laboratories. The ASCP is, in turn, under AMA. The medical technologists, themselves are trying to create a whole hierarchy--you have the CLA, the CLT and then the MT. Together, the professionals are egotistical, condescending people. If it comes to a question of who is right or wrong--the engineer who knows a machine inside and out, or a doctor knowing nothing about it--the doctor is always right.

There is also the whole aura of responsibility. One of the first questions we are asked when we want to put a BMET in a summer program is: "Who will be responsible for the student's actions?" A feeling for this responsibility can be understood in the following example. If you have a person in to fix your TV, and he goofs it up, he can come back the next day to fix it again; but, if you have a person fix a defibrillator, and he puts too much juice through it, there is no next day. So, there is a problem of responsibility.

After I show you slides of some of the equipment used in BMET work, I will attempt to answer questions you may have about the program.

BMET Program
Technical Education Research Center
142 Mt. Auburn Street
Cambridge, Mass. 02138

FACT SHEET

Bio-Medical Equipment Technician Training Program*

Description.

A BMET must be a high school graduate and will receive two years of technical training in math, physics, electronics, biology, chemistry, physiology, etc. He will work with instruments in his course as well as make field visits to hospitals, research institutes and industry. Copies of the proposed curriculum are available on request.

Function.

Several grades of BMET's will be produced by the program, ranging from those qualified to do simple service, to those doing instrument design and modification. Some will end up as operators, some as teachers, others as sales engineers.

Employers.

Most graduates will go to industry. A slightly smaller number will go to hospitals and the rest will go to research institutes and university laboratories.

Need.

According to an initial survey and study, there is an immediate need for approximately 5000 such technicians. The same study projected a demand increasing to about 10,000 by 1970.

The availability of BMET's in hospital and research laboratories will permit increased use of instrumentation as well as improve the quality of work presently being done, hence the demand will snowball as more BMET's get into the field.

Pilot Programs.

The pilot program is taking place at Springfield Technical Community College in Springfield, Mass. A second program will start at the James Connally Technical Institute in Waco, Texas, in January.

Scope.

The curriculum development program will continue for two to three years. It is anticipated that more than 100 Technical Institutes and Community/Junior Colleges will become involved when the program is completed. Many requests for assistance have already been received.

*Development of this program is being supported by a grant from the U.S. Office of Education.

PARTIAL LIST OF EQUIPMENT

to be employed in the

Bio-Medical Equipment Technician Training Program

- Automatic Chemical Analyzers
- Artificial Organs and Prosthetics
  - Kidneys
  - Heart-Lungs
  - Limbs
  - Valves
- Balances
- Blood Cell Counters
- Blood Flow Measuring Devices
- Blood Gas Analyzers
- Centrifuges
- Chromatography
- Diathermy
- Electroanalytical Instruments
  - pH Meters
  - Titrators
  - Conductivity
- Electrophoresis
- Monitoring Equipment
  - EEG
  - ECG
  - EMG
  - Ratemeters
  - Alarm systems
- Nuclear Equipment
  - Scintillation counters
  - Fraction collecters
  - Pulse Analyzers
- Optical Devices
  - Microscopes
  - Cameras
  - Projectors
- Photometers
  - Spectrophotometers
  - UV
  - IR
  - Colorimeters
  - Flame Photometers
- Plumonary Instruments
  - Spriometers
  - Gas Analyzers
  - Plethysmographs
- Refractometers
- Sterilizers
- Stills
- Simulators
  - Pacemakers
  - Defibrillators
- Temperature Equipment
  - Baths
  - Thermometers
  - Controllers
- X-Ray
  - Diagnostic
  - Therapeutic

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE
Armory Square, Springfield, Mass. 01105

FIRST SEMESTER	CLASS	LAB	STUDY	UNITS	CREDITS
Math (Algebra & Trigonometry)	4	0	8	12	4
Basic Electricity	3	4	6	13	4
Electronic Devices	2	4	4	10	3
Bio-Med Technique I (Anatomy, Physiology & Seminar)	2	3	4	9	3
English (Composition & Report Writing)	3	0	6	9	3
	14	11	28	53	17
SECOND SEMESTER					
Bio-Med Measurements (Mechanical Thermal)	2	3	4	9	3
Electronic Circuits	2	3	4	9	3
Electronic Amplifiers	3	3	6	12	4
Bio-Med Techniques II (Chemistry, Clinical Techniques & Seminar)	3	3	6	12	4
English	3	0	6	9	3
	13	12	26	51	17
THIRD SEMESTER					
Bio-Med Measurements (Optical-Radiological)	2	3	4	9	3
Trouble Shooting Bio-Med	2	3	4	9	3
Bio-Med Electronics	3	3	6	12	4
Bio-Med Techniques III	3	3	6	12	4
Sociology of Bio-Med	3	0	6	9	3
	13	12	26	51	17
FOURTH SEMESTER					
Economics	3	0	6	9	3
Bio-Med Transducers & Telemetry	2	3	4	9	3
Bio-Med Techniques IV	2	3	4	9	3
Speech	3	0	6	9	3
Bio-Med Systems Design & Equipment Selection	3	6	6	15	5
	13	12	26	51	17

1 September 1968 Group

PEOPLE-CENTERED COMPREHENSIVE VOCATIONAL-TECHNICAL EDUCATION

Dr. Maurice J. Daly, Assistant Superintendent
Quincy (Mass.) Vocational-Technical School

It seems to me that this is really a worthwhile type of seminar for the simple reason that one of the most difficult tasks we have to do in education is to talk with each other. We just do not get enough opportunity to communicate. Throughout this country, many many worthwhile activities are going on which could be emulated, or modified, for your local situations. More of these seminars should occur. I am happy to have this opportunity to contribute to the program, and tell you what is happening in Quincy.

Project Involvements

Quincy, I believe, is now recognized as one of the progressive school districts in the country. Part of this is the result of a positive attempt to take a realistic look at what we are trying to do with kids.

We are involved in a great number of projects. Project Able, which is the earliest curriculum development projects, will be discussed in more detail a little later.

We are also involved in Project Plan which is headquartered on Palo Alto and tied in to an IBM 360 computer. This unit is pushing out information on curriculum to a number of school districts throughout the country. The learning units are developed in Palo Alto. Three or four people from our district have been working on the project for the past year, and another group will go to Palo Alto in September. Besides development of curriculum materials for the program, information about the learners--guidance information, reading levels, learning styles and things of this kind--is stored in the computer. When Johnny finishes a unit of work in Quincy, this information is transmitted to Palo Alto and evaluated; then it assigns him the next unit of work. This process is done over-night. It is a different kind of program: totally individualized and ungraded in the sense of marks, but graded in the sense of how well Johnny did in terms of his ability. This program involves six grades at the present time--fifth through tenth. Eventually, the system will permeate throughout the school system.

We are also involved in the ES '70 program. ES '70 is a project of the U.S. Office of Education and grew out of Project Able. Seventeen school districts around the country are involved in the project which seeks to gather information about good programs and individualized instruction by basing it on behavioral analysis. This will be done for all of the activities of the students in school. The course materials we develop will be tested in terms of how well the behavioral goals are reached.

There are several other programs in progress which I will not go into at this time.

The Quincy Situation

Quincy, Massachusetts is a city of approximately 90,000 citizens. There are about 16,300 students in the public schools. Of this number, about 3500 are in grades ten, eleven and twelve. These are the students who are involved in Project Able.

The school district of Quincy consists of twenty-two elementary schools, five junior highs, one vocational-technical school and two high schools. We also have a city-operated junior college with an enrollment of about 1400. Our operating budget for this calendar year will be about 11 million dollars.

In September 1967, we opened the new vocational-technical facility. This school has a capacity of eleven hundred students--roughly one-third of the total high school population. It is planned that about one-third of our high school students will be enrolled in trade and industrial programs, another third in business and home economics, and the remaining third in college preparatory.

Up to the present time, Quincy has had a pretty traditional school system. The community is of high middle class composition. The economy is based, primarily, on the skills of the people who live in this fairly-well industrialized town.

One of the largest ship-building plants in the country is located in Quincy. We also have machinery manufacturing, electronics, and many other industries. About thirty-five percent of the population works in industrial-type occupations. The largest percentage of these are in metal working trades. I would guess that some 14 percent of the people work in merchandising and business occupations, and 9 or 10 percent are professionals. The Quincy area has no primary wealth--no coal, oil or such natural resources. We take raw materials and convert them into products. This situation depends upon skills--and this is the area where we felt we will continue to develop in our economy. The new school program will conform pretty much to this community occupational pattern.

In the past, high school education has had a strong business and a strong college preparatory emphasis--for about 50 percent of the kids.

In the distant past, we had a general program. We have gotten rid of the general program; we say that all programs should be aimed at a goal. It is no longer just a matter of students existing in classes for twelve years and getting out of high school.

The new vocational-technical building is a really unique design. It is planned for maximum efficiency and for teaching in areas of occupations, rather than specific occupations. To this end, also, we are developing a new curriculum under Project Able.

Project Able is funded under adult-vocational division of Public Law 88-210. The title, Project Able, has no significance except that we hope the kids will be able to do something when they leave us. Funding is set at $625,000 for five years.

My main purpose, here today, is to tell you something about this curriculum, the processes used in developing it and things of this kind. Before doing this, however, I would like to present some of the original philosophy which led us to undertake the project.

An Occupational Field Approach to Vocational Education

I suppose in the last analysis there is only one great body of wisdom. Perhaps this may be called philosophy. All the sciences, skills, understandings, and knowledge are parts of this great body. They must fit together in an organized and orderly fashion that govern all aspects of man's existance, his plans in the hierarchy, his relations with his fellow man and his interaction with his environment and the cosmos.

This is not new. It has been stated in many ways, by our earliest philosophers, and is still being stated in modern times. I presume, however, that in our times the notion is being reinforced by the explosion of knowledge and discovery of new ways that man has learned to use the forces of nature to his advantage and perhaps to his destruction.

We in education have always hoped that knowledge will lead to wisdom, however, as we look at the problems in the world today, we should question what we have been doing in hopes of finding better ways to achieve our educational goals. Perhaps we should even question the word "goals". Perhaps what we should seek is "direction" rather than goals.

In recent years thinkers in the field of education have questioned what has gone on in the field. They have questioned the revelance of materials, methods, and facilities in terms of the job that must be done. From this questioning may emerge an era that may be known as "The Renaissance in Education."

There has never been a time when more forces were at work to bring about change. We must re-examine the objectives of education in light of the world today. We must be careful not to get caught up in the cyclone of change, just for the sake of change. We must be sure that whatever change is made is relevant to the roles that people must play in the world, and in the future as we can interpret the future. The perspective is more important than the parts.

The real answer to "What's New" may be that for the first time, since the establishment of the first high school in the United States, in Boston in 1821, we have begun to question the intrinsic value of the ingredients of what is called education. We are now asking "Education for What?" This is not really new; John Dewey questioned this many years ago. In 1900 he stated, "If history is just a record of the past, it is hard to see any grounds for claiming that it has a bearing on shaping the future. There are too many urgent demands in the present, too many calls over the threshold of the future, to allow our students to become deeply immersed in what is forever gone by." He said, "Education is for life: therefore, it should be life." Now we are beginning to heed his admonition. Education is making a critical evaluation of what is relevent in order for us to live in the world of the future rather than the world of the past.

In view of what has gone on in educational history and an analysis of present needs, we may conclude that during this age there is a deep concern by all leaders of our Governmental, Economic, and Social Agencies, that education is a life-long process. It must be for "all" people of all ages and of all abilities; and it must prepare them to be good citizens, productive members of society, and to achieve maximum self-fulfillment. In fact, it has been stated that education is the number one problem in our society today.

It is clearly indicated that education must change if it is to keep abreast of the changes in our way of living, brought about by surging forces in the technical, social, and economic structures of modern society. Therefore, we must look at the pressures that call for change, in order to meet the challenge of the future.

These are confusing times. We are traveling uncharted courses in all areas of our existance. There are no guide posts or compass points, no precedents or perimeters. There is only the challenge and reason. With these two ingredients education finds itself on the edge of its greatest and most fruitfull era--or it can reject the challenge and decline into oblivion by default.

We have passed the point in history where discovery and exploration, whether these apply to geography, science, human relations, or the arts, are accomplished as the result of one man's mind. They are the accumulated disciplines of many minds. We have passed the era when we could spread our population by sending people out to settle new territory and conquer the wilderness. The problems we face today are more nearly associated with man's relations with his fellow man and his ability to assume his place in our society. These are major problems that face us, and education seems to be the most effective force to produce the tools and methods that will solve the problems and to bring about the "great society."

Education is the new frontier. In this role it must be broadly conceived and it is this new role that is bringing about changes in education.

We are deeply concerned with the individual in the new education. We have learned that we can no longer "Process" classes through education. Now we are concerned with how we can "individualize instruction" taking care of individual differences, needs, and wants, and allowing pupils to move at rates consistent with their own ability.

No longer can we afford the luxury of wasting our yougsters in classes that are too difficult for some and not challenging for others, and therefore, lack the quality of excellence for all.

Recognizing the great need for individualizing learning experience for those whose primary objective is not college entrance, we must conclude that their greatest need is for relevant education which will prepare them to enter the world of work at some level; therefore, the job of education must be more deeply concerned with the needs of the world of work. According to national statistics, we are talking about the 80% of all students who will not complete a baccalaureate degree, and in reality, national statistics also point our that a baccalaureate degree is a requirement for only 12-15% of all employment.

The great growth in employment is the field of vocational and technical pursuits and it is quite apparent that the growth of employment opportunities in these areas will increase in geometric proportions. Therefore, education at the secondary and the post-secondary levels must address itself to this great educational need. Indeed it is quite apparent that occupational education ought to begin even much earlier than the secondary school level. No longer can the sole emphasis be on a college preparatory type of education for all, even to the point where we attempt to water down such college preparatory education for those of lesser ability. The new education must deal more with the intellect than with the memory. It must be an education which will provide learning experiences for all, whether the student is verbally or non-verbally oriented. This education must also be geared to the relevant world in which our students live.

We are moving away from teaching things that may be easily outmoded or will have little use in the future. We are finding that there is just as much, or more, "mental discipline" in subjects that are future oriented, as there is inthe traditional curriculum that is oriented to the past.

We are not contending that there is no value in traditional subjects. What we are contending is that the new education must be aimed at developing in our students curiosity, open-mindedness, objectivity, respect for evidence, tolerance, and a capabity to think critically, rather than students who are a storehouse of facts without wisdom.

In Quincy we have looked at our educational system critically and have decided that there must be changes in order to produce relevant occupationally oriented education for the largest percentage of our students. We have reached the conclusion that this kind of education must break from the traditional single skill type of education which has been followed in the vocational education of the past. It has been determined that what is needed is a broader base type of vocational education, since most of the newer occupations embody a great many skills in various disciplines rather than single skills. Most occupations today are interdisciplinary and, therefore, it is our belief that they should be taught in an interdisciplinary fashion.

In Quincy we have called this an approach to developing education in the families of occupations and we have selected eleven families. We have concluded that by individualized scheduling through various disciplines and developing an inter-relationship of these disciplines, that we can produce specific occupational training in 255 occupations, whereas in the past a large school could provide training in 10-15 occupations. This type of education is student centered. It has as its objectives the highest possible development of each individual student in matters of vocational competencies, good citizenship, and self-fulfillment. It has as its secondary objective the development of self-responsibility for one's own learning.

Thus we seek a future oriented education, rather than a repetition of the past. We seek to develop open flexible minds in self-supporting, well-adjusted people who will not only believe in the future, but will help to forge it.

In concluding these thoughts, I would like to quote from John Gardner. In his book, "Self Renewal," he states: "Instead of teaching youngsters that their task is to stand dreary watch over ancient values, we should be teaching them the grim but bracing truth that it is their task to recreate those values continuously in their own behavior, facing the dilemmas and catastrophes of their time. Instead of implying that the ideals we cherish are safely embalmed in the memory of old battles and ancentral deeds, we should be telling them that each generation refights the crucial battles and either brings new vitality to the ideals or allows them to decay."

That summarizes the kinds of thinking which has lead to the inauguration of a curriculum that will fulfill our new philosophy.

Bases for Decision-Making

I was called to testify before the House Education Committee at the end of January on the new vocational education act. A copy of Part III* of the proceedings will be given to you after this presentation. This report describes pretty well what we are trying to do in the project.

Rather than speaking directly on what has already been printed, I will talk around it. Specifically, I would like to describe some of the processes we went through trying to decide what to do about curriculum.

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*VOCATIONAL EDUCATION IMPROVEMENT ACT AMENDMENTS OF 1967. HEARINGS before the General Subcommittee on Education of the Committee on Education and Labor, House of Representatives, Ninetieth Congress, Second Session on H.R. 8525 and related bills. A bill to amend the Vocational Education Act of 1963, (Part III).

Gathering Occupational Information.

Prior to Project Able, we had a small vocational-technical school which enrolled not more than 300 students and covered nine occupational areas. The largest number of the high school students went to the comprehensive high school and took college preparatory programs. A great many students ended up with a high school diploma--period.

We started out by taking a look at the kind of community that we live in. The kind of program we have developed was based, to a large degree, upon the statistics we gathered. One of the most difficult things we do is to get adequate information on which to base course selection and size of departments.

We started by trying to get information directly from industry and the Employment Service. We wanted to know how many people were employed, what kinds of people, how old they were, their attrition rates and that sort of thing. It just didn't work. Neither the Employment Service, nor could we, gather information this way. Industries would not give you this information. It is kind of a trade secret with them--one of our largest employers refused to give this information because that its release would put them in a bad competitive position if their customers learned that they had shortages in different job categories.

Finally, what we did was to use the Quincy Police Listing. This listing is made up from an annual census required in Massachusetts. The information was obtained by knocking on doors and asking: how many people live here, how many are over 21, what do they do for a living--and this sort of thing. We used this information to find out how many people were employed and in what specific occupations. This gave us a percentage breakdown in the employment categories. From this data, also, we could decide upon probable future needs because ages were also given.

We are in a fairly stable type of community. We do not expect tremendous population increases or decreases. We don't expect any great changes in occupational patterns; therefore, we could come up with figures which said--assuming that the next ten years remain pretty much as now, and these kinds of employment continue to exist--we should train so many people in these occupational areas as replacements and slight additions.

The information we obtained was not only on those employed in the community, but also on people who lived in the community and worked up to 50 miles away.

Behavioral Analysis.

Once we had decided upon the types of occupations we needed to serve we turned to curriculum. First of all, we decided that the kinds of curriculum to be developed should be based upon behavior analysis.

If you havent' heard much about behavioral analysis, you will be hearing a lot about it in the future. All of education, and particularily vocational education, will be based on it sometime in the future. It is a very useful thing. What it does is to set up objectives that you must reach in education. It gives you direction for developing curriculum.

Much information for the analysis came out of the new Dictionary of Occupational Titles.

Precedents for Job Families.

During the Korean War, I was a training consultant for the Defense Manpower Department of the Department of Labor. As we looked at the population at that time, its distribution was shaped something like an hour-glass with the 18 to 35 group forming the narrow position. As a nation, we were fast becoming older--and younger. One of the big scares at the time was that we could not produce a fourteen million man army--as we had done during World War II--since 18 to 35 producers were in demand by both industry and the military.

Another factor worrying us was that, while many of the machine tools and equipment built during World War II were in storage, we would still have to start the new development effort from scratch. You don't store skills on a shelf. It takes 10 to 15 years to develop a productive machinist. A large boring mill operator requires a four-year apprenticeship before he is trained. These people were just non-existent. We had to develop all kinds of training programs in order to parcel out the manpower in the best possible way.

During World War II, we also had a similar problem. When I was stationed at Alameda, California, we began experimentation on cross-over or transference of skills in order to solve manpower problems. The first area we explored was patternmaking. We started out by trying to determine what skills were closely related to the area so that we could take advantage of transfer and expedite training. The first group of people who came to mind was sculptors. We found out that, with some training in the use of hand-tools, they could become patternmakers in a short period of time.

We tried to analyse why this was so. We found out that this success had something to do with aptitude; such as, the ability to visualize, three-dimensionally, from two-dimensional drawings. Further, there seemed to be many mental--attitudinal--things that go with occupations which influenced learning the job. Transference of these was more frequent than tool skills; however, even in tools skills, cross-over was shown.

The next group we experimented with was amateur painters. We found that they could learn patternmaking quite readily, but it took longer than with the sculptors.

Following the Korean War, the people who wrote the new Dictionary of Occupational Titles began to ask: "Can we bunch occupations together?

Can we find relationships between occupations? Rather than just job descriptions, can we identify families of occupations and describe the extent of relationships--brothers, sisters, cousin, uncles and so on?"

Now, the new DOT does two things: first, it lists the relationships of jobs--it shows, for example, the hierarchy of jobs in metal occupations and how they are related; secondly, it gives you the characteristics of people who work in these occupations. This second item is very important as far as behavioral analysis is concerned. For example,if a person has a fear of height, he shouldn't plan to become a steelworker; people who are color-blind should not be in some kinds of hospital work, or perhaps, in electronics. All the factors listed in the DOT give you a good basis for saying that a person just doesn't have the physical characteristics for that kind of work--and he should try something else.

The Comprehensive Program

The information provided by the DOT, and other sources, started us on the road to behavioral analysis. We, then, set out to discover the attributes that people should have, or develop, in order to be employable after graduation. The families approach broke up much of our traditional thinking because now we know that we didn't have to start training the student to be a machinist the first day of school and, three years later, have him emerge as a machinist--but nothing else.

Through behavioral analysis, we have been able to develop those portions of the various programs within a family which are closely related. We can put in the common elements of numerous occupations within the family. For example, in the metalworking family there is commonality in such things as measurement, structure and quality of materials, metallurgy and practices. So, we pull out the common factors--mathematics, chemistry, metallurgy, or other elements--and include these in a basic program.

This is a tremendous departure from the normal educational process where U.S. History has to be in the junior year, or physics has to be in the fourth year. We are putting the subjects where they are actually needed. The commonality approach, and assignment based on need, are generalizable across the whole family of occupations. Specialization begins after the broad basic program has been completed--during the first year of a 3-year program.

A Typical Family Approach.

The basic program for a youngster in the metalworking division will include experiences in foundry, pattern shop, machine shop, cutting metals, machine tool operation, metallurgy lab, testing metals, drafting and measurement. One thing you can see, that happens in this program,is that the student does not have to select an occupation when he enters the shop--the first year. The only decision he has made is, simply, that he would prefer to work with metals that first year. So, we put him in the metal and machine division which includes anything that happens to metals.

After gaining a broad-based experience, the student is in a better position to say that: "I prefer to cut metal, rather than melt it." As he progresses further, he may say, "I prefer to work in automotive engine rebuilding, rather than manufacturing parts in a machine shop. I prefer assembly occupations related to machine shop or ship-building; or I prefer things involving machine design; or metallurgy." The choices become more specific as the student progresses--even up through grade fourteen.

The Occupational Families.

We have selected eleven occupational families in the Quincy school. Some of these are currently operational. Others will begin this Fall, or in the near future. The eleven occupational families selected for our community were: business education, computer data processing, electro-electronics, foods preparation, general piping, general woodworking, graphic arts, health occupations, home economics, metals and machines, and power mechanics.

The business occupation students will start out with basic typing and clerical experiences, move on to business machine and finally, move into data processing.

Data processing is concerned, primarily with programming and equipment operation--starting with key-punching and working up.

Everything that is electrical or electronic is taught in the electro-electronics division: power generation-transmission, controls installation and communications.

The Foods division includes all food occupations: cooking, baking, waitressing, cashiering, bookkeeping and many other things.

General piping is concerned with anything that uses pipe: plumbing, pipe-fitting, air-conditioning, refrigeration and steam-fitting.

The woodworking divisions includes carpentry, cabinet-making, boat building, furniture building and other occupations.

In graphic arts, we have not gone into production printing. We begin with commercial art and design, and move from that to offset reproduction. We are geared more toward the so-called, captive shop, than toward production shops.

We have five areas in the health occupations family: practical nursing, dental assistant, medical laboratory assistant, surgical technician and dental technician.

We are doing a great deal with interdisciplinary approaches in the programs. I was quite surprised, last Spring, to find the dental assistant and practical nursing students in the culinary arts department. The chef was explaining such things as bone, veins, muscles, marrow and tissue to this group during a meat-cutting demonstration. It was quite an experience.

As I mentioned previously many of the families are already developed programs. The behavior analyses and materials for the three demonstration programs this year will be developed and printed, and will probably be available through the U.S. Office of Education.

The Interdisciplinary Approach.

The first thing we are doing to promote inter-disciplinary activity is to provide time for teachers of various disciplines to get together.

The second thing we have done is to design a building to fit the program.

One thing that has always bothered us is why we build solid walls between such classes as a physics lab and a math room. As a result of this arrangement, these teachers never talk to each other. We say -- they must talk to each other! In our building, we have tried to eliminate walls, or make the walls easily movable; even now, we are moving walls -- in spite of the fact that the building is not yet completed.

We are also looking at social studies, English and all of the other requirements of the high school program. We are saying that there is no reason that this youngster must spend his time in opposition with Shakespeare-- because it isn't relevant. What he does need is a good background in communications. So, when he writes a composition, it should be a technical paper describing what he was doing yesterday in the field of electronics -- or whatever field he is pursuing. Further, that the English teacher's concern is the style used, and the content would be a concern of the electronics teacher. These two people will have to work together. In this paper, also, mathematics may have been used -- which will make the paper a part of the math teachers job. The educational parts must fit together, and that is what we are trying to do by getting the teachers to talk with each other.

Developing Relevance.

Another thing we have been trying to do is to look toward content which has meaning -- relevance -- to the student.

One of the best courses in the constitution that I ever had started out with the question: "Explain to me why you have to use Form 1040 or 1040A to make out your income tax." If you do some research on that question, you will find that you will have to go back to the Magna Carta -- or farther. You can develop relevance!

We had an iron foundry, Ames Sword Company, which started before the Revolutionary War. Originally, they manufactured swords for the British using local bog-iron from the peat bogs. Following the war, I have been told that they came up with the saying, "Change your swords into plow-shares" -- as they changed their name to the Ames Plow Company. The company had developed waterways and wheels, triphammers and forges. Some of that is still around -- you can trace it. What I am getting at, is this: the greatest course in U.S. History could be taught right from metalworking in Massachusetts. These things can be relevant -- they do not have to be cold, sterile fact: memorized and regurgitated.

Opening Channels to Life-Long Learning.

Through the interdisciplinary approach, we are attempting to get the teachers -- history, English and the rest -- to teach shoulder to shoulder, and work out their problems together. They must cater to the needs of the youngsters.

Students in our programs can elect to take the subjects which will allow them to enter into an engineering school. Many of our youngsters do go directly from, what used to be called, our trade school into an engineering school in a field related to their (public school) training. Some have entered with advanced standing.

In this day, education must be a life-long process. Students must take the responsibility for their own learning -- we must develop this capability within them. In order to do this, we must make education relevant, something they can believe in and something they want.

The Problem of Teachers

The greatest difficulty we have is to find teachers who can do the job we want done. We want the kind of teacher who can see beyond the narrow technical subject matter that he teaches: the math teacher who can look at a mechanical thing and see math there; the English teacher who, when he looks at a piece of electronic gear, can see the wealth of material that must be written so that someone else can understand its use. It is difficult to find these people.

Another difficulty we have is to find teacher training institutions that are willing to train teachers along these lines -- toward new approaches in education. These institutions are still training a person who likes to sit 25 to 35 kids in front of them, lecture to them for three-quarters of an hour and say, "Do twenty problems for tomorrow. Friday there will be a test."

One of the reasons institutions do this is that they are afraid that they cannot sell teachers unless they are taught in the traditional way.

We want teachers to be a coach, rather than a lecturer; to work side by side with students and even say, "Well, I'm not quite sure, Johnny, but I wonder what would happen if we did it this way?" -- and learn right along with the kids. Really, what we are talking about is not a team-teacher in a sense, but rather, a director of learning. I would compare this person to a physician who, when you go to him with an ache or pain, doesn't have to get well himself. He has to find a way for you to get well. This is what teachers have to do with kids. They don't have to have all the knowledge, but they have to find out a way for Johnny to get the knowledge -- by the method that best fits his learning-style and his capacity.

I think that we spend too much time saying that we can't teach Johnny because he can't read. The fact may be that he is not a good reader -- maybe we need other media to correct this. On the other hand, I am not sure what reading is going to be like 10 or 20 years from now with all the other media we have. If we are professional people, we will have to teach students whether they can read, or not. Sometimes, I get the impression that teachers only want to work with top students. Like a physician who refuses to treat a case because it is terminal, this is crazy. He must treat everybody, not just those who can get well; likewise, the teacher cannot teach only those who can learn best.

We must find ways to teach. We can no longer dump our kids out of school with nothing; this is one of the things that is wrong with society, today. So, as professionals, teachers must find ways to do their job. They must be good diagnosticians and find the best methods by which the person can learn. I am really not concerned with teaching -- I am concerned about learning.

These are the kinds of teachers I wish institutions would produce: people who know how to work with people; who have empathy; who will try different methods; who will experiment; and who will find out the best way for each youngster to learn.

We are at the cross-roads of change. I think that the pressure for change must come from the bottom -- from those who see the needs -- from people with a vision. They will have to exert great pressure in order to make things move at the top.

The Curriculum Design

I believe that I have spent enough time talking about Project Able. I would now like to give you some illustrations of the school's curriculum design including the ES'70 system approach.

Model Curriculum (Chart I).

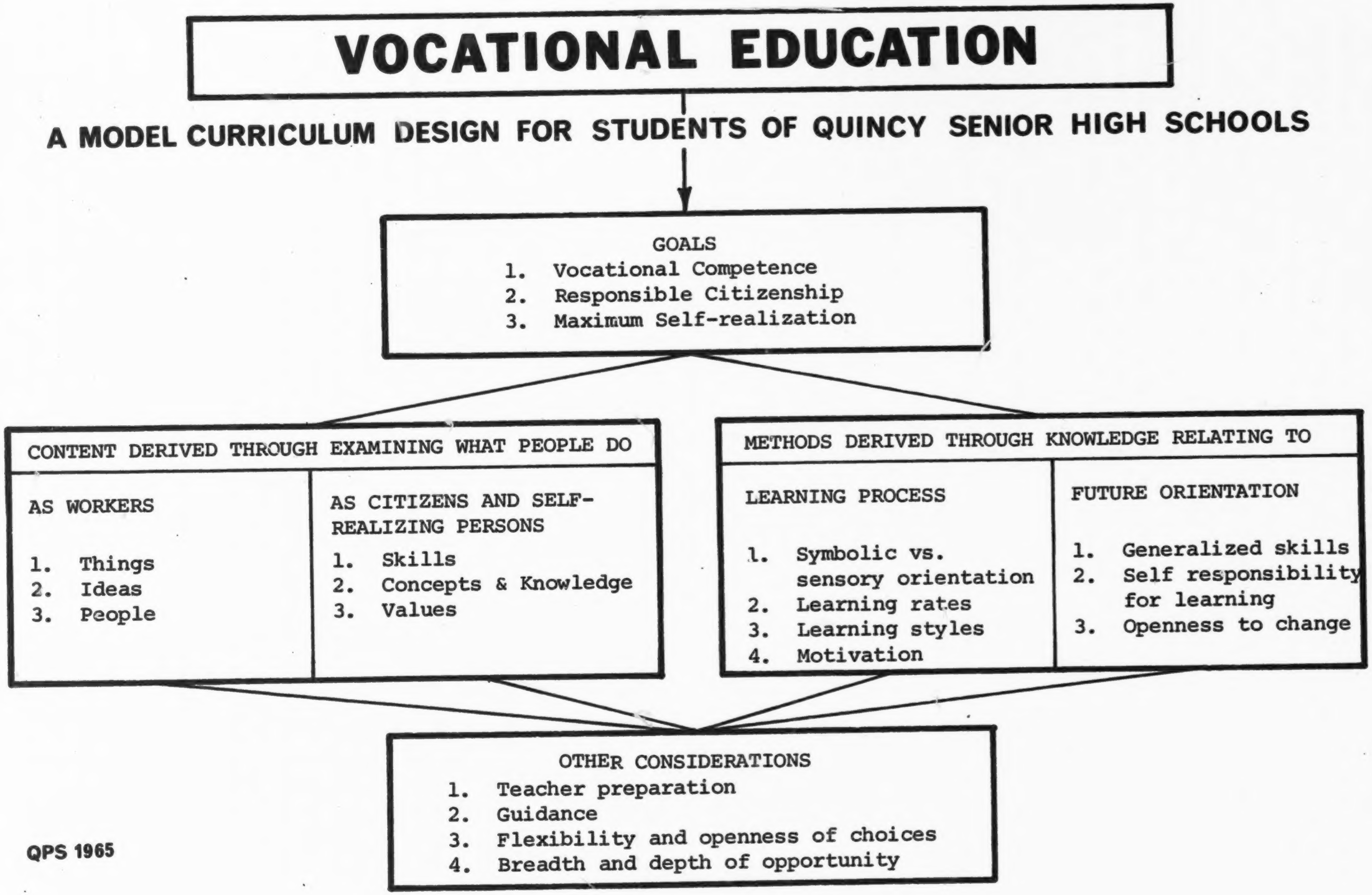
The first paper being passed out is called, "A Model Curriculum Design for Students of Quincy Senior High Schools." I want to point out, especially, the three major goals.

The first, vocational competence, means that students can go out and get a job, and the employer wants them. What we have done in each occupational family is to develop a hierarchy of jobs. Consequently, a student leaving school at almost any time would have skills which are saleable -- even before graduation. We have identified get-out points in the curriculum so that the student may become, for example, a chip steward, a machine oiler, a machine operator or a machinist -- depending on how far the student has gone before leaving school. This has been done for each of the eleven occupational families -- each rung of the ladder brings the student to a higher skill level.

The second goal is responsible citizenship. We find that this should be everybody's goal.

The third goal is maximum self-realization. We don't want to train just mechanical men; we want the individual to enjoy his life and living, and the finer things; to have a good life. So, to provide these things he may take art, music, literature or other things which he may want.

CHART 1



VOCATIONAL EDUCATION

A MODEL CURRICULUM DESIGN FOR STUDENTS OF QUINCY SENIOR HIGH SCHOOLS

GOALS
1. Vocational Competence
2. Responsible Citizenship
3. Maximum Self-realization

CONTENT DERIVED THROUGH EXAMINING WHAT PEOPLE DO

AS WORKERS
1. Things
2. Ideas
3. People

AS CITIZENS AND SELF-REALIZING PERSONS
1. Skills
2. Concepts & Knowledge
3. Values

METHODS DERIVED THROUGH KNOWLEDGE RELATING TO

LEARNING PROCESS
1. Symbolic vs. sensory orientation
2. Learning rates
3. Learning styles
4. Motivation

FUTURE ORIENTATION
1. Generalized skills
2. Self responsibility for learning
3. Openness to change

OTHER CONSIDERATIONS
1. Teacher preparation
2. Guidance
3. Flexibility and openness of choices
4. Breadth and depth of opportunity

QPS 1965

The content that goes along with this curriculum is derived through examination of what people do. As workers, what they do with things, ideas and people. As citizens and self-realizing persons, we talk about the skills, concepts, knowledge and values. All of these are worked into the curriculum.

On the other side of the chart are the methods derived through knowledge relating to: 1. The learning process -- the symbolic vs. sensory learning, learning rates and styles, and motivational things; and 2. in future orientation, we seek generalization of skills (not narrow skills), self-responsibility for learning and openness to change.

The generalization of skills will, quite possibly, have cross-over importance -- as John Bugbee has suggested in the BMET field -- and will permit transference, or addition, of skills to fit new technical areas: electronics transference to the medical field, or addition of the bio-medical to an electronics background. Someone has said that technology is nothing more than a cross-hatching of the theory and skills of several disciplines. Further, since learning is a life-long process, we must develop in-depth inquisitiveness and open-mindedness for continued growth.

Other considerations in this curriculum design include: 1. the problem of teacher preparation; 2. guidance is a problem, and we hope to have the Project Able guidance program published soon; 3. flexibility and openness of choice -- the students have to learn that, for every decision they make, they may have some penalties; 4. to lessen the shock of major decision-making, we are attempting to provide opportunity for a series of minor decisions -- paralleling skill level development and leading in some direction.

A Systems Approach (Chart II).

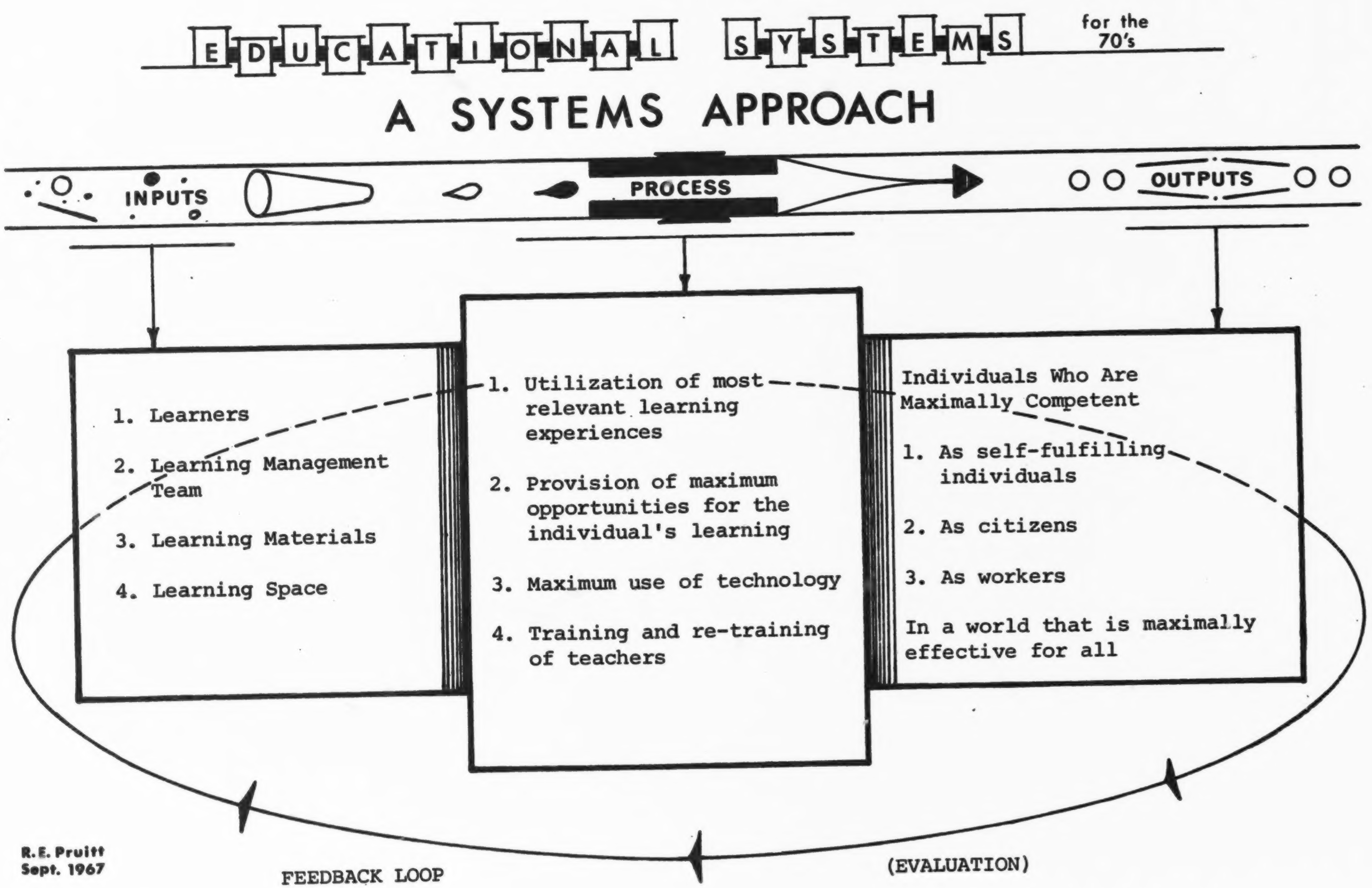
The model curriculum has developed into the ES'70 program shown on the second paper. We are now talking about using the systems approach to learning: inputs, process and outputs.

The inputs we see here are the learners, learning management team, learning materials and the learning space. These go through the processes of utilizing the most relevant learning experiences, providing maximum opportunities for individual's learning, maximum use of technology, and training and re-training of teachers.

To maximize individual's learning, we have set up a skills development center (the older term was a remedial reading center). In this center we may have a student struggling to read at the fourth-grade level and, next to him, one studying something like atomic theory. Youngsters will travel their own directions to get where they ought to be, and to learn what they ought to learn. We do not talk of levels.

The outputs are aimed at producing individuals who are maximally competent as self-fulfilling individuals, citizens and workers -- in a world that is maximally effective for all.

CHART 2


EDUCATIONAL SYSTEMS
for the 70's
A SYSTEMS APPROACH
INPUTS
PROCESS
OUTPUTS
1. Learners
2. Learning Management Team
3. Learning Materials
4. Learning Space
1. Utilization of most relevant learning experiences
2. Provision of maximum opportunities for the individual's learning
3. Maximum use of technology
4. Training and re-training of teachers
Individuals Who Are Maximally Competent
1. As self-fulfilling individuals
2. As citizens
3. As workers
In a world that is maximally effective for all
FEEDBACK LOOP
(EVALUATION)

R.E. Pruitt
Sept. 1967

Then, of course, we have an evaluation which feeds-back into the system.

How Choices Are Made (Chart III).

The next paper has to do with how occupational choices are made.

The competence area identifies the student as a citizen, as a worker and as self. The worker segment, shown in black, indicates that the student has decided to enter the metals family of the program.

In the metals and machine division, there are many things he can do -- the job hierarchy shown does not include all of the alternatives possible. From this hierarchy, the student has chosen to become an all-around machinist. This choice was made after a year spent in exploring the metals family.

In order to be a machinist, the job description indicates that he must learn to set up and operate any machine tool in any machine shop, carry-out the jobs, etc.; however, he still has some other choices. For example, the student may decide that he likes the tasks of heat-treating and he could make this his specialty. He could specialize in any area, but not to the exclusion of the general task requirements of the job hierarchy. This interest emphasis involves an increased effort in the specialty task area.

The last column on the chart indicates the pre-requisites, skills and concepts the student ought to have for the job.

As you can see, what we have tried to do here is to soften the blow of major decision-making. There is a whole range of alternatives available for the student.

Project Able Learning Unit Format (Chart IV).

The learning unit chart briefly describes what is contained in the learning units developed in Project Able.

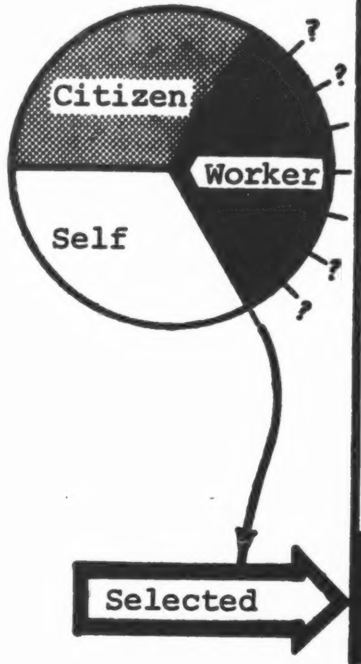
The objectives are what the student should know or be able to do after completing certain experiences.

The overview is a statement of why the unit is important. It provides a meaningful setting, context or perspective of the goal.

The learning experience is a statement of how to go to a new capability -- the methods and procedures to be used for gaining the unit objective.

The summary is a statement of where the student has been, and indicates relationships and relevances between these experiences and the objective.

PARTIAL CONCEPTUAL DESIGN FOR A BEHAVIORAL ANALYSIS (CHART 3)

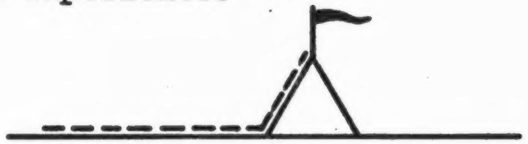


COMPETENCE	JOB FAMILY	JOB HIERARCHY	JOB DESCRIPTION	JOB TASKS	PREREQUISITE SKILLS & CONCEPTS
	Business Educ. Computer Data Processing Electro-Electronics Foods Preparation General Piping General Woodworking Graphic & Commercial Arts Health Occupations Home Economics **Metals & Machines** Power Mechanics	(Complex) Machine Design Technician Tool & Die Maker **All-Around Machinist** General Machine Operator Lathe Operator Machinist's Helper (Simple)	**Sets up and operates any machine tool in any machine shop. Carries through all jobs to completion. Interprets blueprints and performs all mathematical calculations required to complete the job**	**1. Interprets blueprints** 2. Selects stock 3. Determines machine sequence 4. Lays out work 5. Sets up machine 6. Makes part	Blueprint reading Mechanical Drawing Linear measurement Competence in elementary geometry and trigonometry

Quincy Public Schools - R. E. Pruitt - January 1968

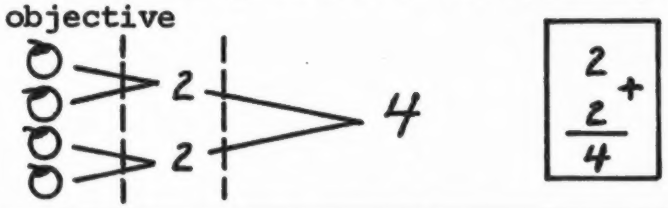
LEARNING UNIT CONTENTS (CHART 4)

1. **OBJECTIVE**
Statement of goal...what the student should know or be able to do after having had certain experiences



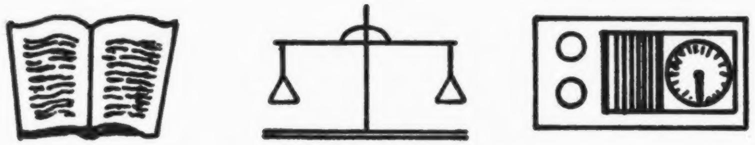
2. **OVERVIEW**
Statement of why...provides meaningful setting, context or perspective of goal

3. **LEARNING EXPERIENCES**
Statement of how to go to new capability... methods and procedures for gaining the objective

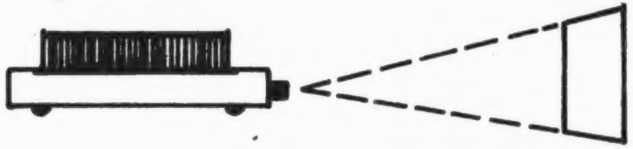


4. **SUMMARY**
A backward look at where student has been... indicates relationships and relevances between experience and objective

5. **REFERENCES**
Defined supporting aids which provide the route to competency...the essential tools



6. **LEARNING AIDS**
Film strips, cutaways, simulators, equipment, and other communicative devices...or set of work problems



7. **STUDENT EVALUATION**
The ways and means of knowing if a capability has been reached...the only part of unit which student does not see in advance

The references are the defined supporting aids which provide the route to competency. They are the essential tools to accomplish the learning.

The learning aids include the whole range of devices to promote learning.

All of the above are aimed at student evaluation as ways and means of knowing his capability has been reached. The evaluation is the only part of the unit which the student has not seen in advance.

Lessons can be taught at several levels and utilize several media. Therefore, the learning will not be the same for all students. We consider learning styles and capabilities before providing the educational materials that a student needs.

(At this time, I would like to show you some slides of the new vocational-technical facility.)

CURRICULUM INNOVATION FOR CHANGE WITHIN THE SCHOOL SETTING

Mrs. Hilda Watson Gifford, Director
Project FEAST

This morning I picked up a newspaper which contained the following comments by Mayor Stokes of Cleveland. He challenged educators to be open to change and to muster a little humility with regard to their achievements. He went on to say that the linkage between school failure and job failure are just as close as they are devastating. In Cleveland, 4000 students drop out every year before graduating. Of these, 2500 join the ranks of the disadvantaged and the unemployed. He concluded by suggesting that a certain humility regarding school achievements can serve as an invitation for much needed new programs and ideas. He urged educators to expand their successes -- too often a demonstration program shows the validity of a new idea, but never progresses beyond the demonstration stage.

On the 18th of this month in the financial section of the Chronicle, Sylvia Porter raised the question of, "Careers Without College Degrees?" She points out that both educators and management are probably incorrect in insisting that a college degree is necessary for everyone -- that half of the over two million young people who have just received their high school diplomas, will not be going on to college. She goes on to tell about the practical education now available to youth. At the top of a list of programs she lists computer programming. Second on the list is cooks and chefs -- she states that: "Drastic shortages in trained chefs in the nation for restaurants and hotels translate into almost limitless opportunities for those interested in the field. The best chefs in the U.S. today earn $25,000 or more a year... practically none of those chefs has a college education."

Education, A Partnership

I thought that I would start this talk by giving you part of a talk I gave in April, 1967, at the Compton (California) Union High School District. In Compton, which borders on Watts, they are doing some of the most exciting things in education. Their philosophy has been, "We can't wait. There isn't time to wait. We have to start immediately."

Industry and education can, and must, be partners for the good of the future, industry and the nation. A recent Associated Press release quoted Charles Zellers (Associate Commissioner, Bureau of Elementary and Secondary Education) as follows: "Schools of the future may have to take more responsibility for students who do not go to college."

Parents used to say, "Get an education so you won't have to work as hard as I do." They now say, "Get an education so you can get a job."

Education is for the student -- we are apt to forget this. Occupational education must be a partnership of education and industry working for the student. A program to be successful needs dynamic community and industry support. It needs an administration with enthusiasm and vision to telescope beyond the horizons of the ordinary objectives of education. This administration must have the courage and the forcefulness to break with tradition, if necessary, to revise and discard the outmoded model -- whether those models represent the plant facilities, the curriculum, the teaching procedure or even teachers and adminstrators.

If we in this nation are to survive, the models must change. The education system, which is so steeped in its own educational pattern that it has not kept pace with our rapidly changing world, must be revised. One reason this must be done is that students of today, as a whole, will not continue to accept the outmoded, the useless, or that which they cannot relate to life.

Industry will not, and cannot, accept the unqualified person who has been through the twelfth grade, but often cannot read, write or speak beyond the fifth grade. Industry may, of necessity, be forced more and more to take the leadership in education. Eventually, if we in education allow this to happen, industry will not only take the leadership but also the funds available. If industry spends its money on education, then their tax money will not be available for education. So, the partnership of industry should be developed, strengthened and promoted. Then, we have no one or nothing to fear.

We are told that education is the nation's biggest industry. We also know that the food services industry is the fourth largest industry -- or the third largest, depending upon the statistics that are read. In 1966, newspapers reported that they did over forty billion dollars worth of business. It has been estimated that this volume will more than double during the next ten years. Now, my question is: "Why shouldn't the two largest industries in the nation form a partnership and create a strong educational program?"

FEAST Background

Now, let's look at the history of Project FEAST. It was founded in 1964 through a Ford Foundation seed-money grant which was administered by the Hotel and Restaurant Foundation of the City College of San Francisco. Ford Foundation's interest was to see if the ideas used in the Richmond Plan, pre-tech engineering, programs would work successfully in another occupational field.

The FEAST program was also funded from the beginning by the Vocational Act of 1963 through California's State Department of Education, Vocational Education section, Bureau of Homemaking and the local school districts.

From 1966 until July first of this year, the program has been sponsored by the San Francisco State College, Center for Technological Education through another Ford grant. On June 30, 1968, the Ford grant was terminated. Starting about January, I began to work on the problem of obtaining matching funds and, as of July first, the Statler Foundation has agreed to provide these for the next year.

The FEAST Program

FEAST is a comprehensive high school program centered in the Home Economics Department. It offers interested and qualified students in the eleventh and twelfth grades an opportunity, first, to explore; and then, to prepare for a career in the food service and hospitality industry. (Some of the teachers in our summer workshops are talking about the possibility of getting the program into the tenth grade.) The program was designed, originally for one-third of the high school students who, at least in the beginning, could not qualify to attend college. These students are often characterized as underachievers: having good potential, but lacking in motivation to learn even basic subject matter. They are classified as capable, but average. However, FEAST has never been, and never will be, a holding or chair-warming program. The students who come into the program are involved from the first week, and if they aren't able to become interested or involved, they do not stay with us.

FEAST uses the team-planning approach. The home economics teacher is usually, but not always, the team leader. One of the best leaders we have is an auto-mechanics teacher who had been a cook in the Navy. The team members include the following people: home economics, business and math, and English teachers; a counselor; and the cafeteria manager.

Students in the program learn the fundamentals of commercial food preparation and service. This subject matter is coordinated with mathematics, science and English courses and incorporated into a regular high school program.

FEAST uses industry and community involvement. Each school has an active advisory committee from management and labor before the program opens. A recent trade publication, commenting on one of these early advisory committees, said that the roster read like who's who of the industry. Our advisory committee is the who's who of the industry. Their guidance is assurance that the program meets the needs of industry. Industry leaders strengthen the program in innumerable ways: they make tours and speakers available, they offer employment opportunities, and more and more, they are making scholarships available.

FEAST is an open ended vocational program. I have to use the word vocational because we are funded under the Vocational Education Act of '63, but frankly I prefer to say that it is an occupational program. The program leads to work experience, apprentice programs and to employment -- as well, it leads to junior and senior college post-high school education.

An example of the relationship of the program to post high school education has been noted in our area. The City College of San Francisco put on an extra foods instructor last Fall to handle the increased number of applicants for their hotel and restaurant programs from the Bay area.

The FEAST program has appeal to different ethnic, social, cultural and economic groups. It offers opportunity and challenge to students with a wide range of academic backgrounds and abilities.

It uses the school cafeteria facilities as a laboratory. Why spend all the money to build a commercial foods lab when you already have a well-equipped school cafeteria? Further, the cooperation of the school district cafeteria supervisors and managers gives the program the benefits of the skills, backgrounds and interests of the school lunch personnel.

FEAST cuts the cost, and builds interest and cooperation in all the departments within a school. To quote the principal of Sequoia High School: "FEAST is the best thing that ever happened to our faculty." I thought he was talking about the FEAST faculty; but he said: "No, that's not what I mean, Hilda -- I mean the entire faculty. We have never had such unity of interest and purpose as we have had since this program has started." At Compton High School there had been quite a bit of faculty dissension the year before FEAST started. They now have a beautiful faculty dining room with service -- like being served at the Waldorf -- and you have never met a happier faculty family. The program has really been great for the total faculty.

The records indicate that the students show many improvements. We have practically no dropouts from FEAST programs even though the two original schools using the program were made-up of better than 85 percent potential dropouts. If a student drops out of the program, usually, his family has moved from the district. Not only is there better attendance, but also, there are better grades. The educational sights are raised; about 22 percent of these students -- many potential dropouts -- go on to junior college programs.

In almost all of the schools, teachers, administrators and counselors agree that juvenile problems are very often solved after students enter the program. However, the other day, a counselor was telling me about a young man who was very good -- artistic and really very good in everything -- but he had one real specialty: he was a specialist in stealing cars. So, they don't feel that they are going to succeed with that one; but maybe when he comes out next time he will be with them.

The role of the FEAST office is to assist in the innovation of FEAST programs. We provide secondary school teachers with pre-service and in-service training related to the food service and hospitality industry. We assist in the coordination of programs with trade associations, industry and labor, and serve as consultants throughout the state for FEAST programs. We assist in the organization of work experience programs and job placement. We provide a center for resource materials and information.

What's In A Name

I think that I will tell you a cute joke on one of our teachers. She wrote to Bordon's home office, back East, asking for materials that would be helpful for the FEAST program. In the letter, she forgot to spell-out what FEAST meant. After a long period of time, a company representative stopped in to see her. He said: "I'm sorry that we were so long in getting material, but none of us at the office could figure out, at first, just what we had that could help your program." The teacher looked at him sort of funny -- she couldn't remember what she had written, so she questioned him further. In reply, he said, "Well, FEAST -- that's female education and sex training, isn't it?"

What FEAST really is, is a new name for cooking and baking, for culinary art, for the hospitality and service industries.

When we first approached schools with the idea, we got the same age-old questions and resistance which I have met during the better than forty years that I have tried to promote education in this field. That was that boys won't cook -- boys won't go into food subjects -- boys won't go into the industry. And I have said for years -- that wherever you have a good program, like in Oklahoma for instance, boys will cook; they love it, they are good at it; and they can make a fortune at it -- but the program must be GOOD!

To help overcome this resistance when it was brought up, I gave an assignment, and offered a prize, at our first workshop for the best name for the program. So, the teachers came up with the name, Project FEAST -- Food Education and Service Training. The name has been catching: the boys are proud of it, teachers are proud of it and so are the schools. I think it is working -- families do not resist young people enrolling in an open-ended comprehensive FEAST program.

In 1964, two schools offered the program to 48 students -- 85 percent of these were potential dropouts. In 1965, we had five schools; in 1966, eight schools; in 1967, ten schools; and this Fall there will be fifteen schools. There would be seventeen schools this Fall except for funding cuts which have forced postponement until the following year. In all, there will be about 750 students enrolled this Fall.

Compton High School has 150 students enrolled in the program. Oakland Technical School started with 28 students drawn from the whole school district and had 180 applicants this year from the technical school, alone.

Goosebump Stories

To give you an idea of the kinds of students who were in the program last year, I will relate what Dorothy Schnell, Head of the Homemaking Bureau in California, calls goosebump stories.

One student in the program was student body president in his school which had an enrollment of over 2500. This potential dropout was given the Statler Award and has just completed his first year in the Hotel and Restaurant program in the City College of San Francisco. He also works on the front desk of the Sir Francis Drake Hotel -- and they tell me that he is one of the best young men that they have ever had. He is from a minority group -- an underprivileged youth -- and one of the sharpest, finest young men I know.

David Redmond was one of the first graduates in the program (on the table are some career profile reprints about David). His early education was gotten from a rural school in the Deep South. He really had no educational background even though he was in twelfth grade.

Unknown to us, David and a classmate who would also graduate from the program went out to look for a job before graduation. When they returned to school, David was very upset -- and so were his teachers. When I walked into the school the teachers said: "This program is a whole lot of hogwash. Industry won't hire these people."

I was shocked. I didn't know that any of the people were looking for jobs yet. So, I asked the teachers what had happened. They told me the boys had gone out and nobody would talk to them. Well, the things that the teachers and boys didn't realize were: first of all, that the boys had gone out without any introduction or paving of the way by the school; and secondly, that due to sit-ins at the Palace Hotel, General Motors and other places, when a minority person walked through a door, they thought he was there to make trouble. So, I went to the principal and asked if I could use the two boys to establish a pattern for placement for Project FEAST students.

With the principal's permission, I met with the two boys. As I sat across the table from them, David looked up at me and said: "Mrs. Gifford, you know nobody's ever gonna hire me. I can't get a job anyplace." I said, "No I don't, David. I have operated restaurants, dining halls and industrial feeding, and if I opened a restaurant, I would hire you. So, I know that if I would hire you others will hire you." Well, he didn't think so. So, I said, "Will the two of you be guinea pigs and let's the three of us experiment to see how we're going to handle this problem." They agreed -- and I told them how I would like them to dress, what questions they should be prepared to answer and that I would give them letters of introduction for an interview. Then, I went out and called two of our big chain operators.

I sent David to Mannings, Incorporated. He had his interview and was employed. When David returned to school he went to his teachers and said that he wanted to talk to them privately. His first comment was: "This program's gotta change." They wondered and asked David what has to change. Dave asked: "You won't be angry?" When reassured, he said, "Well, its gotta change 'cause somebody's gotta teach us manners."

Well, the teachers had been attempting to teach manners. They were not confident that they had succeeded too well so, they asked David if he would be willing to explain this to the other students. David did, and the group started work on manners -- believe me, you have never seen better manners.

Before he left the teachers (the day of his manners suggestion) he turned back and said, "And there's something else." They asked what that was, and he replied, "Somebody's gotta learn us grammer." Of course, up to this point you couldn't keep the kids in the English class -- or they just sat there. When David came back from that first interview with these two comments, things had to change.

David was given a Statler Foundation Award. Since he couldn't possibly pass the entrance examinations of the junior college where he wanted to go, I suggested that he take the work experience opportunity and use the Statler grant to fund his course work in two academic subjects at Merritt College for the first year. In this way he could earn a little money and decide which college he wanted to go to -- you see, we never told him he shouldn't go to college, or that he was going to have a bad time at college.

He went to work at Mannings. The first two college courses he took he didn't really pass, but we had everyone interested in what was going to happen with these boys. Now, he has seasoned for a couple of years; so, he came back and wanted to try college again -- and now he can do it. He is really off to the races.

Another interesting story relates to discipline with students.

Paul was a member of a black leather jacket gang. He had never been in serious trouble with the police, but he was a member. Very early one morning, shortly after he joined FEAST, a counselor heard the door of the office open and Paul came in. Paul handed the counselor his jacket and said, "Here, you can have it. I don't need it anymore." The counselor said, "Oh, you mean you want us to keep it today -- you're warm enough?" Paul said, "No. You can have it. I don't need it. I belong to FEAST." He turned around and, proudly, walked out. The leather jacket is still there.

About two weeks ago, I called two of the boys and asked them if they would come and be luncheon speakers for our teacher training workshop. This workshop has about 70 teachers, administrators and counselors enrolled. They came -- and brought down the house. Some of the teachers asked that we have them come to their schools to talk with their students. Both of these boys are black. One is finishing his first year at City College and works on the front desk at the Sir Francis Hotel. The manager there tells me three or four times a year that he is the best young man he has ever had. The other young man wants to get his degree so that he can teach cooking; he is also working as a head chef at the present time.

Uniqueness

What are the unique features of the program? How is FEAST innovative? These questions are asked all the time.

Some people in our State Department have asked me for two years, "What's so innovative about FEAST?" A few days ago, one of these people called me from Sacramento to say that he had just talked to a group about a FEAST program which he had recently visited; and he called it one of the most innovative programs that he had ever seen. So, it is now on record there as innovative. This man always told me that it was illegal -- but it was all right. He also said that I was the best "con-woman" he had ever seen. That ain't so -- it is just that, when a program is good, I will fight for it! How about you?

The most unique feature about FEAST is that academically oriented secondary school teachers are successfully offering an occupationally oriented program in comprehensive high schools. The teacher training is, apparently, the key to this success. The teachers tell us over and over again that they could, or would, never do the job except for the training they get in our unique workshops.

Teacher Training

The workshop uses, what I call, a reversal of the old type teacher training procedure. FEAST uses the vocational teacher and the best qualified industry personnel to give already qualified secondary school teachers an opportunity to learn how to relate his (or her) subject matter to teaching the family of occupations in hospitality and service industries. This procedure could just as easily be used for other occupational fields.

Teachers actually experience the production and service jobs for which they will be training students. The first counselor we had almost had a heart attack when he walked into the workshop and we said, "All right, go get your uniform and your locker kit. This is your assignment in the kitchen." He said, "What! I'm going to peel potatoes?" We replied, "Sure, you're going to peel potatoes. There's lots of skill involved, and also, a lot of mathematics and science." And there really is.

When I mention, reversal of the old type teacher training, I didn't mean this in a nasty way. I carry a trade and industrial teaching credential, a life coordinators credential, and have worked in trade and industrial education for 18 years.

I came into teaching from administrative work in business and hotels. Following methods used in industry, once a week we would call a staff meeting of all the teachers in the program. We would discuss where we were, plan where we were going and what needed to be changed. I never found that magic word, team-teaching, but I guess in theory that is what we were doing. In the high school, it seemed to work. We are not team-teaching, however, as the term was originally accepted as a process in education. Therefore, we say that we are team planning, but from there on, the team works together.

Now, the teacher training workshops are given in the Hotel and Restaurant Department of the City College of San Francisco under contract with San Francisco State College. This was one of the things we were told couldn't be done -- that you couldn't train teachers in the junior college. Thanks to the people at State College, our teachers get graduate or undergraduate credit at State College if they want it. Since the teachers are also funded under the Vocational Act of 1963, they do not have to enroll in State College. In a few minutes, I will show you a slide film presentation which explains in greater detail how the workshop operates.

In general, what this training approach does is to overcome the shortage of qualified chef instructors for comprehensive high schools. The skilled home economics teacher, with her training in foods, learns from an executive chef-instructor how to teach quantity foods. The workshop instructors are not just key people. The foods and baking instructors are internationally known, and the service-operations instructor runs a highly successful restaurant in Chinatown. Not only are these people outstanding instructors, but they are available throughout the year as resource people and consultants.

Now, what this arrangement means to me is these key people provide an umbrella over the 16 high school programs in the state. California couldn't find 16 real good chef instructors for high schools -- because if they are good chef instructors, they are good enough to be earning a minimum of $25,000 a year; and no high school pays that kind of salary.

When I was with the American Hotel Association, I can safely say that there were only 3 strong high school programs out of some 330 in the whole United States -- because you can't get qualified chefs. We think that our system solves this problem. I do not recommend the FEAST approach for teaching hospitality and service occupations beyond the high school; but now, I say that I do not recommend anything but this in the high school.

Industry Involvement

We have much interest, cooperation and involvement of industries in the FEAST programs. This is provided in many ways. Some of the trade associations include the National Restaurant Association, the American Hotel and Motel Association, Food Service Executives, Club Managers Association of America and the American Culinary Federation.

The California branch of the Culinary Federation has done the most amazing job of organizing their chefs in cooperative effort. The chefs sign-up in advance, develop whatever instructional material will be needed, bring in equipment and demonstrate for the students. They are doing this in the Compton area -- and everyone of the Compton kids has a job before he graduates.

The Cornell Society of Hotelmen have taken on Project FEAST as their project to promote food services education throughout the nation. They give lectures and demonstrations, help plan field trips, and some of their personnel men go into the schools to give students practice in interviewing. They also provide students with work experience and placement opportunities; they work on advisory committees and bring the FEAST program to national, state and local conventions. The latest thing they have done was to raise $250 to buy reprints of David Redmond's Career Profile for use by counselors, and for career days.

The American Hotel and Motel Association, in cooperation with the American Culinary Federation, came up with the Earn While You Learn program which is a natural for FEAST students. This is a work experience program in which the student can progress as fast as he proves himself.

Individual firms and organizations, such as the Yosemite Park and Curry Company, have agreed to experiment with our students. We set up a team of seven eleventh-graders with a teacher and counselor to work in their kitchens. The kids held-down jobs right along-side of regular employees, and one of them was the highest-rated employee in the valley that summer. The company had never employed anyone under the age of 18 before; they now have two FEAST teams.

As of this year, the Fred Harvey Company has started to get acquainted with Project FEAST students. They have 21 (or 24) Compton High School students working at Sequoia National Park. Fred Harvey, Jr. and two of their key men are now asking Compton if they can work with the school throughout the year. This interest has increased because Compton has adapted the FEAST approach to business, ornamental horticulture, commercial art and recreation training programs. Fred Harvey can use all of these people.

Interstate Hosts, who operate airport and other restaurants, became interested in the program. Last year, they set up the first $500 2-year scholarship for a student to attend the hotel and restaurant program at City College, and they guaranteed the student $20 a week in employment at the airport -- as long as his grades were up. The student will also have full employment during the summer. They are putting up the same kind of scholarship for a second student this year. They are also in the process of setting up a memorial scholarship for the highest qualified FEAST student to attend any junior college with which the program is articulated.

The Wine Institute has called me several times to ask what they could do. Of course, we can't have wine in secondary schools, nor could they use their wine study course. The last time they called they asked if we would accept a scholarship for City College. So, they gave us $1000 this year to help underprivileged youngsters continue their education.

The Statler Foundation has been interested in our work since we started. In 1965 they gave us $750 in scholarships; in 1966, $1875; in 1967, $4450; and also in 1967, they gave three $200 teacher awards to help fund teachers attending the workshop. They repeated this award this year.

In Conclusion

People seem to be interested, associations seem to be interested, and it would appear that the FEAST pattern could be applied to many other occupational areas. It is an answer to Mayor Stokes challenge. It is a demonstration program that shows the validity of the new idea; but why not take it beyond the demonstration -- to change?

Yesterday we learned that our state budget has been cut by $5000. We know that the same thing is happening around the state, and we wonder how you are to take the program beyond the demonstration stage. I am sure we will find a way. Somehow, we will decrease devastating school failure and job failure perils -- and I am not speaking just for foods. I am speaking for occupational education -- for all young people who need to be allowed the opportunity to make the transition into the world of work as contributing, rather than taking, citizens.

In conclusion, I will show you a slide-film presentation which we have developed to show how the FEAST workshop operates.

Synopsis of Slide-Film Sound Track

Occupational programs such as Project FEAST, which prepare eleventh and twelfth grade girls and boys for a wealth of entry jobs in the food service and hospitality fields, necessitate the retraining of teachers who are already in the comprehensive schools. The Project FEAST Teachers' Workshop is unique in its concept and format, for it is an in-service and pre-service program using an interdisciplinary, or team-teaching approach.

The team for each school is composed of instructors from the departments of homemaking, English and business math; as well as, a cafeteria manager and a counselor. They attend the four-week workshop at the Hotel and Restaurant Department at City College of San Francisco to learn from practical laboratory work and curriculum development sessions how to apply their subject matter to quantity food preparation and service.

During Phase 1, the first two-week period, the teams experienced in-part the occupations for which they will be training students.

The first of three rotating assignments is the baking class. It fascinates everyone. During the three mornings in this section, through a combination of lecture, demonstration and application, they learn how to prepare such low calorie items as cream puffs, frosted cakes, French bread, rolls and all types of pastries.

While one group is becoming familiar with quantity baking, another group is practicing salad making at the food preparation station.

The use of all types of commercial equipment is also part of the training. An instructor demonstrates how to cut a port loin, and weighs the chops to check for consistent weight. Food cost control is of special interest to the math teachers. Instructors continually point out the adaptions of related English and math. All types of meat cutting and cookery are practiced. The importance of presenting an eye-appealing meal is continually stressed.

The third section of the teachers' workshop covers foods purchasing and dining room service. Correct food service techniques are practiced on the 75 to 100 distinguished, and talented, men and women working each day in the laboratory phase.

Representatives of labor from hospitality industries meet with the educators. Other guest speakers cover many phases of management and labor such as hotels, restaurants, hospitals, airlines and other food operations. In the afternoon classes, during the first two-week period, other men and women from industry further instruct the teachers. Truly, labor, industry and education have joined together for their mutual benefit.

As a climax to the first two-week phase, the entire group goes on a field trip to explore the wide world of employment opportunities for the hospitality and service industries. They intensively investigate such places as the Sir Francis Drake Hotel, and the multiple operations of Interstate Hosts, Incorporated, at San Francisco Airport. This long, exciting, stimulating day concluded the first phase of the workshop.

The next two-week period was devoted to curriculum development in the Alice Statler Library Conference Room at City College. In addition to large group brainstorming, each teacher works individually developing his, or her, course outline. At other times, the entire team from a particular school will meet to correlate materials: the interdisciplinary approach.

In spite of, or because of, the rigorous four-weeks training, a cooperative spirit develops among the entire group. Many teachers have expressed sentiments, such as: "We feel that we have discovered an exciting program -- the most challenging and difficult of our teaching lives;" and "The real value of the program is to the high school student ...it helps them see a purpose, and make full use of fine educational opportunities."

Preparing teachers to provide simulated occupational training for high school students, enabling them to be employable in the hospitality industry, is the purpose of the Project FEAST workshop. Through the cooperative efforts of industry and educators, it seems to be fulfilling its aim.

5

ON-CAMPUS WORK EXPERIENCES FOR THE MENTALLY RETARDED

Mr. G. Roy Nicolaysen, Work-Study Coordinator
Oakland Unified School District

I would like to start off by saying a dirty word, as far as special education is concerned, and that word is work-experience. Those of us in special education have been mandated to delete the word from such titles as work-experience program or work-experience exploration by the State of California. It is now called work-study for the mentally retarded.

Guidlines recommended by the State Advisory Committee of the California State Board of Education were adopted March 9 and will become effective September 1, 1967. These clearly indicated that the public school shall provide work training programs, and job placements, for mentally retarded minors at the high school level. They identified a new term, work-study, to be applied to the program for the mentally retarded.

This concept was a significant departure from the work-experience aspect that had been used in the public schools for some time. The concept, work-experience had provided that actual work experience was a peripheral part of the educational program, and that there were rules and regulations regarding the operation of this program which separated it from the regular instructional program for regular children. The idea of the State Advisory Committee was that the work training aspect should be an integral part of the instructional program, and that the teacher at the secondary level should be a team member of the education habilitation team. Therefore, the terminology, work-study, separated the program for the mentally retarded from the traditional restricted work-experience program, and established flexibility within the operation of the program that would permit individualization of the training program based on the students' needs as identified by the habilitation staff.

The California Legislature has requested that reports be provided to them on the progress of this particular program by January 1, 1968. The Department of Vocational Rehabilitation, Research and Statistics Division and the Department of Education, cooperatively, set up a task force and provided an evaluation for the cooperative programs to the Legislature. The preliminary forms have been summarized and some data are now available in a Preliminary Report of California's Rehabilitation Cooperative School Program, regarding the operation of the program throughout California. For your information, this report may be obtained from the State Department of Rehabilitation, Sacramento, California. There are two editions.

There are twenty-seven cooperative school programs in the State of California at this moment. They are all different. I think that the individualization each program has represents a healthy attitude. They show that we are well on our way toward progress.

Beginnings of the WEE Program

Our program evolved in 1959-60. It started with twenty-five graduates of our special education classes in the Oakland Schools. This was not a work experience program, or an on-campus program. It started with the graduates leaving the schools at the end of twelfth grade, and was a three year study. Through this, by trial and error, we found out many things about the MR.

I was fortunate in coming into the act in the 1960-61 school year. The program had started the previous year. Both the DVR counselor and I were half-time persons; so, we all grew together -- the program and the staff.

One of the things we found by trial and error was that on-the-job placement was the keynote of success. This may not be new to some of you who have dealt with job placement; but as a school person, I had to learn how to deal with a new breed of cats -- The rehabilitation counselor. At that time, the rehabilitation counselor was a part of the State Department of Education. Many of these people were not educators -- they were social workers. As you know, in the social worker field, they have just recently turned into a professional group. So, we had all of these people to work and sit with.

We started small, with 25 kids and, as of this year, we have 252.

We started our work cooperation program with DVR when they became divorced from the State Department of Education, officially, in 1963-64. Our cooperative agreement between the Oakland District and DVR was found, later, to be illegal. The district attorney of Alameda County said that it was illegal because no precedent had been set for it. This ruling found its way to the state capital by devious ways and everyone shook his head -- but no one told us to stop. By this time, the DVR counselor and I were on a full-time basis.

We started the on-campus work experience with the twelfth grade class at one of the high schools. We paid the students 10 to 25 cents an hour, depending on the growth of the individual in each of the jobs. These jobs involved work with school maintenance men, the custodian, cafeteria workers, grounds-policing, gardening, etc. Concurrent with this, we came to the conclusion that there should be other concerns besides just work experience. There needed to be a curriculum, or something, with it -- such as extended classroom study.

So, with federal funding, we worked out a course called, occupations, which was to be taken at the twelfth grade and required for graduation. This project was a two-year study and, concurrent with this work, we decided that the on-campus work experience should also include eleventh grade students, and it should include the students from five of the six senior high schools. (The sixth high school, according to the principal, had no educable mentally retarded at that time.)

The Work Experience Exploratory courses were developed; WEE-1 was taken in the eleventh grade and WEE-2 in twelfth grade. By this time, the twelfth grade program had developed into on-campus, off-site, work experience. Students left their home campuses to work at junior high or elementary school campuses in the district.

All of the students enrolled in this work experience exploratory program are clients of DVR. Under the requirements of DVR, the Oakland schools gave the students psychological and physical examinations. The costs for further examinations, psychriatric evaluation and physical remediation are borne by DVR.

Some Problems and Projects

All had been going well in '62, '63, '64 and up to the time when the serpent in the garden of Eden made its appearance. There is always some dirty work at the crossroads. This was the time when government give-away programs, such as NYC, came into the act. They started by throwing out a flat $1.25 rate and allowed the student up to $75 just for going to school. Our students, of course, could qualify, for NYC funds since they were from low socio-economic status. Many began to come up to me, and say: "Why should I only get 25 cents an hour for doing the same work that so-and-so (or my brother) is doing?" Well, it took many a home call and personal visit to convince them that our program had something more to offer than a program designed just keep kids in school. We did, however, lose quite a few students. Then, of course, we had to contend with all the eager NYC coordinators coming into the field. They were out to make a showing, too. So, some ground rules had to be evolved and agreed upon. The ground rules now say that the NYC coordinator will not go out proselyting -- nor will we. We think that we have arrived at satisfactory solutions for the welfare of all concerned.

Two years ago, we had a federally funded program called the grounds and gardeners course. This class was limited to eighteen boys. We actually signed up seventeen boys who were clients of DVR and were eleventh-graders in our special classes. Of the seventeen, sixteen finished the course -- the seventeenth student was offered a summer job the day the class started and we encouraged him to take it.

During the six weeks of the course, we had perfect attendance with the exception of one boy who was arrested and incarcerated in juvenile hall. This turned out to be a case of false arrest based on mistaken identity. All the kid could think about was when he could get out and get back to class -- and would Mr. Nicolaysen take him back. We did take him back. Today this boy has graduated and is working for the Federal Postal Service. Students in the grounds and gardeners class went to class in the morning. Here, we used audiovisual materials and demonstrations in the classroom under a professional gardener and a certificated MR teacher. In the afternoon, they went out and worked for two hours in one of the city parks under the supervision of a professional gardener, the classroom teacher and park department personnel.

They received $1.25 an hour, plus their bus transportation. The program worked out very well.

This year, we were going to run the program again with two groups, but by the time we had received federal approval, and so forth, it was fifteen minutes before the last period of the last day of the term. So, we threw it out the window, along with another program: food preparation and handling. We hope to start this foods program in the future.

Some Major Questions

Some of the questions that are often asked regarding work-experience, or work-study programs for the mentally retarded are: 1. does in-school work experience enable the mentally retarded student to adjust more effectively to post school employment opportunities; 2. are in-school work sampling techniques valid in determining post school job constellations; 3. how can existing community services be more fully utilized so as to prevent duplication of services rendered to the under-privileged, as well as, for the mentally retarded; 4. what should be the role and relationship between the schools, state, rehabilitation and other services in the training and placement of the mentally retarded; and 5. what constitutes a valid training program for the mentally retarded?

The Future of Finance

Two years ago, our budget (the budget of the Rehabilitation Service of the State of California, Oakland District) was $75,000. This figure included training allowances for the on-campus work experience program for eleventh and twelfth grade students. Unfortunately, this budget was cut in half when the new governor came in -- despite the fact that we now have twice the case load. We managed to make out all right; but yesterday we had a meeting of the DVR and school personnel involved in the program and the financial future looks bleaker than ever. We had planned to go into on-the-job training (OJT). We are hoping that the employer-trainer off-campus will pick up some of the tab for training allowances. The future looks bleak to me, but many of the people involved in the program seem optimistic.

Right now, our eleventh graders are working one hour a day on-campus. Twelfth graders are working two hours. The sliding wage scale ranges from 50 cents to $1.00 for eleventh graders and from 75 cents to $1.25 for twelfth graders. This rate is maintained in spite of the competition from NYC. I do not mean to picture NYC as completely bad, but it is definitely a challenge, and a problem, to us because most of the EMR's come from low socio-economic levels.

Presentation of the Film

I think that I will pause now and show you a film. This film was put out by Channel 10, the television station in Sacramento. The film was made in two and a half days, and cost the studio about $2200 to make. The script was written after the film was made, and a certain amount of editorial, or pictorial, license has been used. If I said that no staging took place, I would be telling a falsehood; but in the main, it is as natural as it can be.

This film has been shown throughout the United States and is available to school systems on request. One dubious honor this film has had is that the government of South Vietnam bought two copies. For what reason, I do not know. One state university in south-eastern United States has requested the film eighteen times. I'm beginning to wonder, what gives? I think, that on the nineteenth request, I will accompany the film -- to Miami. Believe it or not, Hawaii has also requested the film a couple of times -- I am waiting for the third one from there, too.

Without further ado, let's look at the film.

Retardation: The 3R's of Hope (A Synopsis)

Teachers of tomorrow face many obstacles in attempting to prepare mentally retarded students in school to join the competitive ranks of potential job holders. Three of these obstacles are specialization, qualification, and to some extent, segregation: three important words in the world of work. Some will seek careers in jobs of choice. Others will merely hold jobs of necessity to live from payday to payday. Whatever their field, they will want and will deserve an equal chance to compete for available jobs. These students, also, want a chance to be wage earners; but they have an additional obstacle to surmount in a day when so many words end in ation: segregation, specialization, automation and -- retardation.

These students are mentally retarded boys and girls. Once they have mastered the three R's taught in school, they have had little hope for a gainful future; but now, thanks to a progressive program, the three R's of frustration can become the three R's of hope.

Do you know what mental retardation is, or are you one of those still in the dark ages of understanding who confuses it with mental illness? Mental illness is a disorder of the personality or emotion. Mental retardation, on the other hand, is an impairment of the mind or intellect -- a failure to develop normally. The degree of retardation ranges widely, from mild to severe. Tonight, we are dealing with EMR's: the educable mentally retarded.

There are approximately six million people, or three percent of the population who are mentally retarded. Eighty-five to ninety percent of these are mildly retarded and can, with special training, acquire job skills and lead productive lives. Most of the others can be trained to work under closely supervised, non-competitive conditions.

In Oakland, an exciting change of outlook for the retarded is taking place. Occupational education classes to introduce twelfth graders to the world of work are conducted in several of the high schools, combined with on-campus work experience for EMR's. Upon graduation, the three R's of hope for these retarded students are: 1. direct job placement by the Oakland School District, 2. job placement through the Divison of Vocational Rehabilitation, or 3. additional on-the-job training at Goodwill Industries.

Freemont High School in Oakland is where the work experience program first started. This is a typical American high school. It offers a comprehensive educational program to all of the children of all of the people. This was not always true in the past. In past years, about half of the children enrolled in this high school would not have been enrolled. The half enrolled would have been there only in preparation for entrance to colleges or universities. Today, this American high school offers a variety of educational experiences leading to technical and trade schools, to junior college and to direct placement from school to business, industry and personal service fields. It offers education to children of limited physical and mental abilities, as well as, to children with average or gifted intelligence. A number of civic, public and private organizations cooperate in this effort.

Three years ago, the State Department of Education, the State Department of Vocational Rehabilitation and the Goodwill Industries of America launched a program at this high school which gave work experience opportunities to students with limited intellectual ability. Before a student can be enrolled in these special classes, and in on-campus work experience, parent's written permission must be obtained.

In a special education class at Oakland High School, the instructor tells the students that the course, occupations, is designed to familiarize them with the procedures, purposes and abilities needed to get a job. At the end of the course the student should have confidence in interview situations and in filling out applications -- to be prepared to go out and obtain a job.

The work experience training stations will be in the cafeteria, on the grounds, in the audio-visual room, cleaning tables in the cafeteria, sweeping -- in many of the types of jobs students will be qualified for after graduation.

The scientist of tomorrow, the world leaders, its writers or great artists -- men of destiny -- may not be found in these classrooms; but the world is not held together strictly by the genius of a few. It is molded by the talents of the many. There is a definite place in life for persons with certain limitations to do work that some classify as menial -- but it is work that must be done. These students can help fill the ranks of those needed to do these jobs.

One hour of each school day, these students have an opportunity for job exploration. Exploratory jobs, such as working in the cafeteria, working with the school gardener, bookbinding in the library, or clerking at the school snack bar, are available. Students are observed on the job and rated according to their proficiency.

The California State Department of Rehabilitation provides money to the school for the work experience program. Students are then paid by checks drawn on school funds. The school thus becomes a training ground -- the Department of Rehabilitation is buying a service: that of preparing students to enter jobs after graduation.

The second of the three R's of hope is the California Division of Vocational Rehabilitation. After graduation, when a student reports to DVR for job placement, he becomes a client. The DVR counselor guides the client to the type of work he is best suited for. This is the beginning of a long personal relationship between counselor and client. Each client is treated as an individual, and interest extends beyond job placement; for once placed, the counselor maintains contact with the client and his employer to make sure both are adjusting to each other.

One of the main abilities of retarded workers is that of sticking to a simple repetitive job without getting bored. Higher IQ persons seem to be affected faster by monotony of routines. One graduate has the clerical job of check-filing at an Oakland bank. Her margin of error is nil. She has a good work record, good attendance and accomplishes her work accurately and rapidly. Her employer is more than satisfied.

The third R of hope develops when a DVR counselor feels that further job training is required. In this case, the client is placed in the Oakland branch of Goodwill Industries. The counselor joins the client on his first day to help him adjust to his surroundings.

Many people think that the Goodwill is a home for the handicapped, but those who work at Goodwill are hired to do constructive work. Often, after a few months of training at Goodwill, people are hired by other employers. Many of the handicapped employees, capable of holding responsible jobs, work at Goodwill because of the prejudices of employers. For the retarded, the money earned at Goodwill through an honest day's work is a payment of pride which idle wages of welfare cannot match. But Goodwill is only the beginning, not an end, for many retarded workers. Each month more employers are hiring the retarded.

EMR's obtain jobs in many classifications. Some of these include: waitresses, stock boys, painters, carpenters, warehousemen, furniture rebuilding, welders, weavers and, in certain rewarding instances, in situations where they may help other handicapped persons -- one girl is employed at the Cerebral Palsy Center in Oakland.

At first, employers tend to be very reluctant to hire the retarded. Those who have hired them soon find their reluctance changing to enthusiasm. They are often equally reluctant to use their sites for on-the-job training of the retarded. Here again, reluctance quite often changes to enthusiasm after they have become involved. The story of placement is not always a happy story of a series of successes. Far from it -- but, even where an employer has met a failure, he may well be willing to gamble again.

The program, participated in jointly by the Oakland School District and the Division of Vocational Rehabilitation for the past three years, has been experimental and has operated under an informal verbal agreement. Its success was capped, recently, when it was accepted as a full-fledged project with a signed contract between the Oakland schools and the State of California.

The contract provided for the establishment of work adjustment services on the various campuses of the Oakland Unified School District high schools. It makes it possible for DVR to purchase services from the district. Monies paid for the district services can be converted to salaries for payment to students participating in work activities on the campuses. This certainly marks a milestone in the vocational rehabilitation and education of the mentally retarded.

What you have seen tonight is just the beginning -- the first rays of light shining through the dark ages of ignorance about the mentally retarded. Hiring the retarded is not a kindness or charity. It's good business. In Oakland, employers are learning that the 3R's of Hope buys benefits for the employer, as well as, the employee. Many qualified mentally retarded people are denied jobs by uninformed employers. If you compare the limited intelligence of the retarded against the mass ignorance of the general public concerning providing job opportunities for the EMR, who is really the most retarded?

Post-Film Comments

I hope that this film has provided some of the answers to the questions I quoted to you earlier.

The individuals that you saw from DVR in that film have all been elevated to higher positions. Mr. Lucas is the number two man in DVR; Doug Clark is now in the State Personnel Office on special assignment from DVR.

We are attempting to get the State of California to accept MR's in state civil service jobs; as they are now accepted in federal civil service jobs without taking examinations. We have over 18 former students in the Postal Department. We have quite a number at the Oakland Army Base, the Naval Air Station, the Naval Hospital, and so forth. They are all products of the DVR and Oakland schools cooperative program.

In the film, you saw Mr. Whipple, the hospital administrator. That was no act. He was most reluctant to speak to Doug Clark and myself when we first went out to see if he would accept OJT. In fact, he refused -- he said: "What, in our hospital. Heavens no!" So, we said to Mr. Whipple: "We know that you have five MR's working for you right now." He said: "What! Who are they!" We said: "We're not going to tell you." Finally, after some persuasion, he consented to start one trainee in the laundry. You also noted that he was quite vehement about saying that none of these people were in nursing or hospital work, but we now have them in the diet kitchen, laundry, and building and grounds. So, we feel we have made a convert there.

The boy mentioned in the film who hid-out from his employer received the apprenticeship award, two years ago, at Hunter's Point Naval Shipyard for being the most outstanding apprentice in the sheet-metal department.

Another rehab person you saw in the film is now head of the service center at Oakland. This shows how well the cooperative program can be run -- if there is mutual trust. We feel, at this date, that we have mutual admiration between DVR and Oakland. We hope that the feeling will spread throughout the districts in the State of California.

Finally, coming back to the serpent in the garden of Eden, one of our ways to counteract the money differential between NYC and our program is to create prestige jobs: such as, teaching aides within our special classes. We have teachers requesting more and more of these people to work in elementary and junior high schools.

APPENDIX F

Evaluation Devices

CONFERENCE EVALUATION

The Pennsylvania State University - Conference Center

Now that you have completed this conference at Penn State, your reactions to the conference will be valuable in planning future conferences. Here are some questions designed to make it easier for you to express your reactions. If these questions are insufficient, please write additional comments in your own words. You do not need to indicate your name. Use an additional sheet of paper if necessary.

1. Name of Conference ____________________ Conference Dates: ____________

2. What form of promotion motivated you to attend this conference?

    Received a brochure . . . . ( )
    Newspaper article . . . . ( )
    Through an organization to which I belong . . . . ( )
    Technical Journal . . . . ( )
    Other ________________________________
    (specify)

3. Did you have enough advance information about this conference before you arrived?

    Yes . . . . ( )
    No . . . . ( )

4. (If no) What additional information would have been useful in advance?

    ____

    ____

5. Describe the one or two most valuable ideas you received from attending this conference. From which topic or speaker did you receive these ideas?

    ____

    ____

    ____

6. Which topics or speakers do you feel could have been omitted and why?

    ____

    ____

7. How close was this conference to your interests and background?

    It was too advanced . . . . ( )
    I understood almost everything but the conference missed my main interest . . . . ( )
    It dealt with my main interests in an understandable and interesting way . . . . ( )
    It was too basic; few if any new ideas . . . . ( )

8. State your general reactions to the total conference?

An excellent program; I received much from it . . . . . . ( )
Many parts were valuable; others not very valuable. . . . ( )
I gained something from attending, but less than expected ( )
It was almost a complete waste of time . . . . ( )

9. Please give your opinion of the general administration, OTHER THAN subject matter and faculty, of this conference from its inception to its conclusion.

a. Conference administration (i.e., registration procedures, meeting room arrangements, visual aids, etc.)

____

____

b. Housing accommodations in the residence halls

____

____

c. Food service on-campus

____

____

d. Housing and food service at other motels

____

____

10. What could have been done to improve this conference?

____

____

11. If you have any further comments on the conference, please write them in your own words. Leave the completed form with the Conference Chairman or the Coordinator.

____

____

____

National Institutes on Innovative Curriculums in Vocational
Technical Education (USOE Project #8-0372)

END-OF-INSTITUTE EVALUATION

Evaluator________________________________

Employing Institution__________________________

Position Title_____________________________

Institution Address (street)_____________________

city________________state______zip______

Positional Responsibility:

Majority of time and effort spent in

administration____ supervision____ Teacher Training____

Program coordination____ Research____ Other (specify)______

____

Major responsibilities take place at the following level

State____ County____ City____ Public Secondary ____

Area vo-tech____ Private School____ Community College____

Federally-contracted school____ Other (specify)__________

GENERAL INSTRUCTIONS. As a participant in this institute, you will be expected to complete the accompanying evaluation forms during the last day of the institute. Further, you will be expected to complete a post-institute evaluation form which will be sent to you approximately six months after the close of the institute sessions.

For convenience, programs are identified on the evaluation forms by number. These numbers correspond to program presentations in the following manner:

Program 1 -- Work Opportunity Center by Charles F. Nichols.
Program 2 -- Drafting-Design Retraining by George W. Elison.
Program 3 -- Market Street High School by Erwin J. Klein.
Program 4 -- Pre-technical Programs by Harry V. Kincaid.
Program 5 -- A New Technolgy by Edmund P. Garvey.
Program 6 -- Comprehensive Vo-Tech Education by Maurice J. Daly.
Program 7 -- Change within the School Setting by Hilda W. Gifford.
Program 8 -- On-Campus Work Experience (M-R) by G. Roy Nicolaysen.

PART I, INQUIRY.

Check in the appropriate columns the programs which exhibit the characteristics listed in the individual questions. Any pertinent characteristic which may have been omitted should be entered into the blanks provided.

	PROGRAMS							
	1	2	3	4	5	6	7	8
1. Which programs offer complete curriculums?								
2. Which of the following experience components are lacking for achievement of full curriculum status?								
a. Related academic coursework.								
b. Social development experiences								
c. Physical development experiences . . .								
d. Personality development experiences. .								
e. Civic development experiences.								
f. Economic development experiences . . .								
g. Positive saleable skills development .								
h. ______________								
i. ______________								
j. ______________								
3. What methodologies were used for learner-needs fulfillment?								
a. Individualized instruction.								
b. Problem solving approaches.								
c. Work simulation projects.								
d. Work experiences.								
e. Work simulated learning situations. .								
f. General education inter-related with vo-tech coursework								
g. Provision for learning reinforcement.								
h. Student behavior change evaluation. .								
i. Learning situation evaluation								
j. ______________								
k. ______________								
l. ______________								

	PROGRAMS							
	1	2	3	4	5	6	7	8
4. The education levels at which program concepts could be utilized in vo-tech education with little, or no, change?								
a. Below the 9th grade.								
b. Between the 9th and 12th grades. . . .								
c. Grades 13-14 (non-degree).								
d. Community College (associate degree) .								
e. Adult retraining								
f. Adult job-skill or knowledge upgrading								
g. ______								
h. ______								
5. Types of students for whom program approaches are most suited?								
a. Educable mentally retarded.								
b. Slow learners								
c. Reluctant, but capable, learners. . . .								
d. Average students.								
e. High ability, motivated learners. . . .								
f. Physically handicapped.								
g. ______								
h. ______								
6. Types of physical facilities where programs could be operated satisfactorily?								
a. Comprehensive secondary schools. . . .								
b. Part-time vocational or technical. . .								
c. Full-time comprehensive vo-tech schools								
d. Community colleges								
e. University or 4-year college								
f. Special schools with homogeneous groups								
g. Occupationally oriented resident schools								
h. ______								
i. ______								

	PROGRAMS							
	1	2	3	4	5	6	7	8
7. Types of innovation evidenced in programs?								
a. New academic subject matter.								
b. New vo-tech subject matter								
c. New methodology for determining subject matter								
d. New organization of subject matter . .								
e. New procedures in class scheduling . .								
f. New class organization to capitalize on student interaction								
g. New student recruitment techniques . .								
h. New guidance procedures.								
i. New educational funding procedures . .								
j. New program evaluation procedures. . .								
k. New learning evaluation procedures . .								
l. New methods for community involvement.								
m. New methods for business-industry involvement.								
n. New student needs fulfilled.								
o. New methods of instruction								
p. ______________________								
q. ______________________								
r. ______________________								

PART II, PROGRAM CLARIFICATION

Rate each program in terms of the statements listed below:
[1 strongly agree; 2 agree or undecided; 3 disagree].

	PROGRAMS							
	1	2	3	4	5	6	7	8
1. The program should be included in most state plans for vo-tech education.								
2. The program should be included in most local plans for vo-tech education.								
3. The program approach is valid for most vo-tech fields (D.E., T&I, Business, etc.). .								
4. Implementation of the program into regular vo-tech education practices would require a great amount of teacher retraining . . .								
5. Inclusion of the program in regular vo-tech practice would require a marked increase in personnel staffing								
6. Success in implementing the program would require a high degree of community public relations.								
7. Business and industry could be expected to support this program without a great degree of selling by the schools								
8. The success of the program is highly continguent upon the cooperation of local business and industry.								
9. The program approach is valid for most age and grade levels of learners								
10. The program seeks to fulfill student needs which are not generally met in public vocational-technical education								
11. The program would require very little modification before inauguration into regular vo-tech education practice								

PART III, PROJECTIONS

A. Innovations exhibited and discussed during the institute.

1. Check your recommendations regarding the future of the programs in terms of their practical applicability in vocational or technical education roles.

	PROGRAMS							
	1	2	3	4	5	6	7	8
a. Should be continued in its present format.								
b. Probably will never be generally applicable								
c. Modification or extension of the program will be required.								

2. What are the most important innovations noted for vocational and technical education in the individual programs?

PROGRAM 1 (WOC) ______________________________________

____

____

____

____

PROGRAM 2 (Retraining) ______________________________________

____

____

____

PROGRAM 3 (Slow learners--Ohio) ______________________________________

____

____

____

PROGRAM 4 (pre-technical) ______________________________________

____

____

____

PROGRAM 5 (New Technology) ______________________________________

____

____

2. (continued--most important innovations in the programs)

PROGRAM 6 (Comprehensive vo-tech school)

PROGRAM 7 (Change in school setting--FEAST)

PROGRAM 8 (On-campus work experience [m-r])

3. Ideas for new directions in innovation based upon institute and personal experiences.

   a. For extension or modification of program innovations which should be investigated

   b. New ideas which should be investigated in the future based upon personal interactional experiences.

   c. Areas of innovation in curriculum which need exploration before vo-tech educational role fulfillment will be possible.

B. Projection of your personal roles in future vo-tech curricular innovation.

1. From the standpoint of your position as an educational leader or administrator, will you

a. Call the attention of educational staffs to the programs and other innovations discussed? yes____ no____

Through what procedures?______________________________

b. Seek to undertake one or more innovative project within the next year? yes____ no____

What kinds?______________________________

c. Encourage your staff or associates to explore innovative practices within the next year? yes____ no____

What kinds of exploration?______________________________

How will you encourage it?______________________________

d. What kinds of a commitment would you like to make toward innovation in vo-tech curriculum during the next year?

FINANCIAL?______________________________

PERSONNEL?______________________________

TIME?______________________________

EDUCATIONAL FACILITIES?______________________________

THE PENNSYLVANIA STATE UNIVERSITY

INTER-OFFICE CORRESPONDENCE

DATE: January 20, 1969

FROM: Hilding E. Nelson, Project Director

TO: Participants of the National Institutes on Innovative Curriculums in Vocational Technical Education

Dear Colleague:

It is a pleasure to be in touch with you again even though the purpose is merely to request that you complete the accompanying final evaluation instrument for our summer institute.

We have not been able to release information on the institutes as yet. Your prompt response to this evaluation request will facilitate completion of the report--and its dissemination.

We appreciate having had the opportunity to work with you during the institute. Your fine participation and interest are largely responsible for its relative success.

Sincerely,

Hilding E. Nelson

Hilding E. Nelson, Assistant Professor
Research and Graduate Studies
405 Education Building
University Park, Pa. 16802

sl

National Institutes on Innovative Curriculums in Vocational
Technical Education (USOE Project #8-0372)

POST-INSTITUTE EVALUATION (6th MONTH)

Evaluator____

Employing Institution__________________________________

Position Title____

Institution Address (street)___________________________

(city)________________________state______zip_________

Positional Responsibility:
Majority of time and effort spent in (check 1)

administration______ supervision______ teacher training______

program coordination____ research____ Other (specify)__________

____

Major responsibilities take place at the following level (check 1)

state____ county____ city____ public secondary____ area vo-tech____

private school____ community college____ coll./university____

other (specify)____

GENERAL INSTRUCTIONS. This questionnaire has been evolved from responses elicited from the End-of-Institute Evaluation of the National Institutes on Innovative Curriculums in Vocational Technical Education.

Realizing the short period of time between the July institutes and this evaluation, please respond to the items in either, or both, of the following ways:

1. CHECK (✓) appropriate blanks for activities accomplished, under way or in advanced planning stages at the time you receive this form.

2. MAKE A CIRCLE (○) in appropriate blanks for items in initial planning stages, or for which you intend to formalize planning or development within the next 12 months.

This is the final evaluation for these summer institutes--your continuing cooperation is greatly appreciated. Incidentally, feel free to make additional comments on the back of questionnaire sheets.

A. How and to what extent have you communicated information obtained at the institute to staffs and associates?

	FREQUENCY		
	None	1-5 times	More than 5 times
1. Circulation of literature obtained at the institute.			
2. Written reports (house organs or other reporting media)			
3. Staff meetings which included discussions of programs presented.			
4. Workshop or seminars of at least three days duration, re. programs.			
5. Informal direct interaction reports to staffs or associates.			
6. Other (specify)			
7. Other (specify)			

B1. How and to what extent have you personally become involved in new curriculum design activities since the isntitute?

	FREQUENCY		
	None	1 - 3 Projects	More than 3 projects
a. Identifying and specifying more appropriate objectives for vo-tech education.			
b. Identifying and specifying more appropriate content for fulfilling vo-tech educational roles.			
c. Redesign of content organization to improve instruction and learning.			
B2. . . . in curriculum engineering activities? a. Making vo-tech education available to students within a larger geographical area.			
b. Making vo-tech education available to students whose needs were previously unfulfilled.			
c. Increasing the number of occupational areas served by vo-tech education.			
d. Improving pupil personnel services--guidance and placement.			
e. Implementing pre-vocational or pre-technical programs.			

B2. (continued)

	FREQUENCY		
	None	1 - 3 Projects	More than 3 projects
f. Improvement of teaching and subject specialization skills of staff members.			
g. Increasing interaction between vocational and general-education teaching staffs.			
h. Preparation of new or better instructional devices.			
i. team teaching in, and across, occupational fields.			
j. Team teaching, interdisciplinary (vocational-academic).			
k. Review and validation of existing vo-tech curriculum content.			
l. Review and assessment of programs effectiveness in terms of objectives.			

C. See next page.

C. Since the institute, how have you been able to promote staff or associates involvements in the following types of curriculum related activities?

HOW	Teacher Workshops and/or Seminars	Teacher team investigation of instruction	Teacher Curriculum Study Groups	Problem assigned to Admin. or Supervisor	Problem assigned, Co-op Superv.-teacher groups	Involved educators outside of the district	Involved bus.-industry advisory groups	Inter-agency projects (gov't, private, etc.)		OTHER (specify & check)		
1. Pre vocational programs												
2. Pre-technical programs												
3. Exploratory work experience programs--careers orientation												
4. Cooperative work-experience programs--vocational or technical												
5. Inter-disciplinary curriculum development												
6. Team teaching and/or differentiated staffing												
7. Program development for slow learners or educable mentally retarded												
8. Program development: special programs for dropouts												
9. Program development: new occupational fields--vocational or technical												
10. Program development: crossing over traditional occupational fields												
11. Research: program or learning evaluation												
12. Research: student attitude development and measurement												
13. Research: assessment of unmet occupational needs												
14. Research: assessment of unmet student needs												
15. Development: instructional learning packages												
16. Development: performance criteria for student advancement in programs												
17. Public relations: improvement of school-community information systems												
18. Public relations: improved business-industry inter-relations												

D1. To what extent have you succeeded in increasing financial commitment toward curriculum innovation since the institute?

	RELATIVE AMOUNT			
	NONE	NONE: may get some in next 12 mo.	SOME allocated now	EXPECT large sum in next 12 months
a. From new levies, inter-agency cooperation, government or private sources.				
b. Changed percentage of state or local fund commitment.				
c. Provided funding to motivate staff innovation: travel, freed-time, etc.				

D2. To what extent has it been possible to commit staff to curriculum innovations since the close of the institute?

	AMOUNT			
	NONE	1 Person Full-time	2-4 Full-time	OVER 4 Full-time
a. Identification of "progressive" staff members and upgrading them to undertake innovation.				
b. Add personnel to the staff with assigned innovation duties: I. Supervisory, coordination, advisors, administrators.				
II. Rehabilitation or special needs specialists.				
III. New teaching personnel				
IV. Consultants for planning and development				
c. Reorganization of staff to provide increased opportunities for innovation.				

D3. To what extent has more time been committed to curriculum innovation since the institute?

	ESTIM. WEEKLY INCR. man-hours			
	0	1-3	4-6	Over 6
a. Supervisors, coordinators or administrators increased time for innovation.				
b. Teachers provided more time to engage in innovative activities.				
c. Change in your own time allocation related to curriculum innovations.				
d. Increased school facility utilization to meet increased needs fulfillment (occupational & student)				

D4. To what extent have facilities allocations changed to provide increased opportunity for innovation since the institute?

	ALLOC. FOR INNOV. PROGRAMS		
	1-3 Rooms	4-6 Rooms	More than 6 Rooms
a. Modification or building begun for housing new curricular innovation.			
b. Space allocated in present facilities for innovation.			
c. Space obtained in cooperation with other agencies for innovation--including business and industry.			